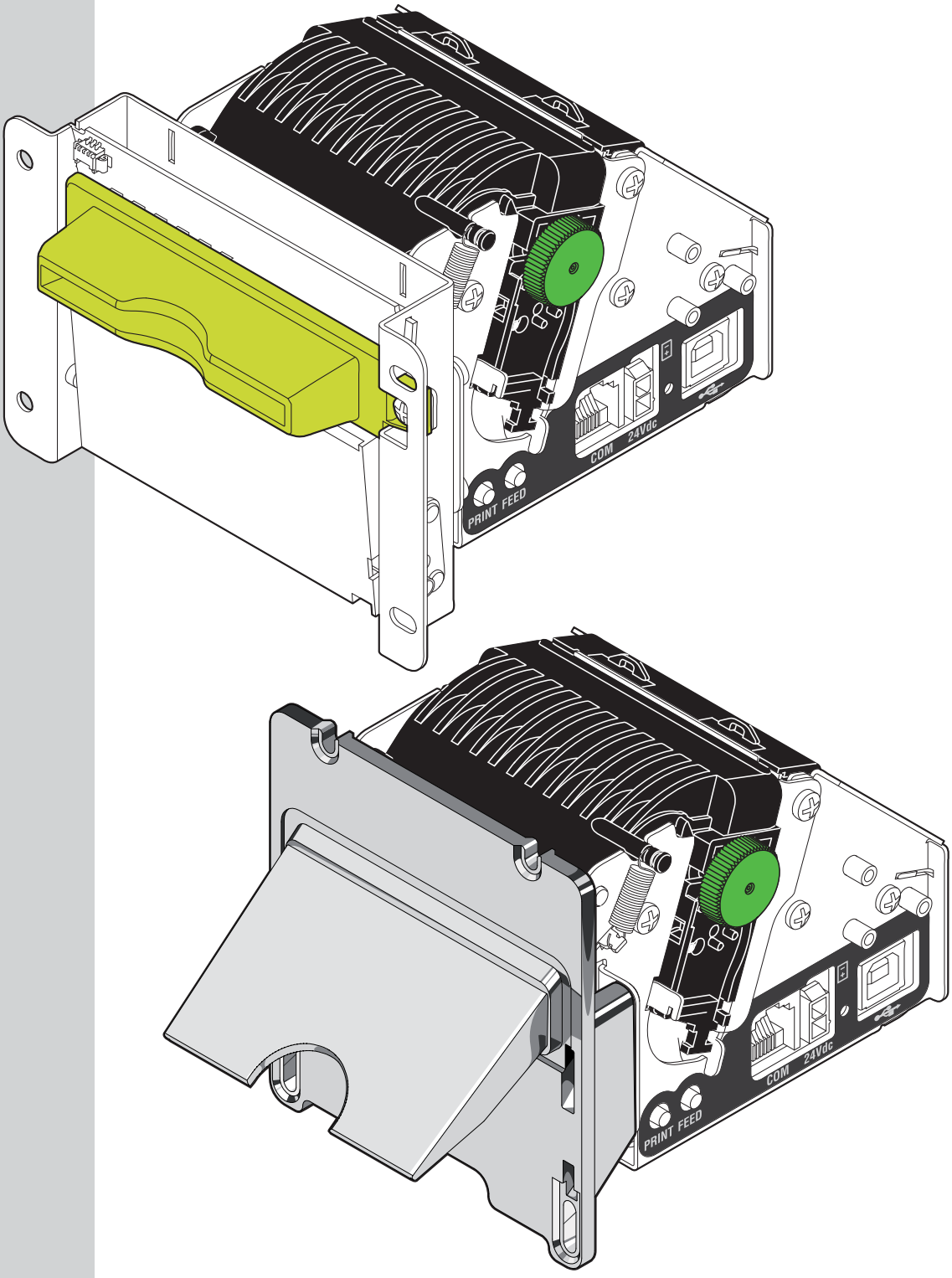
TG2460H

USER MANUAL

OEM



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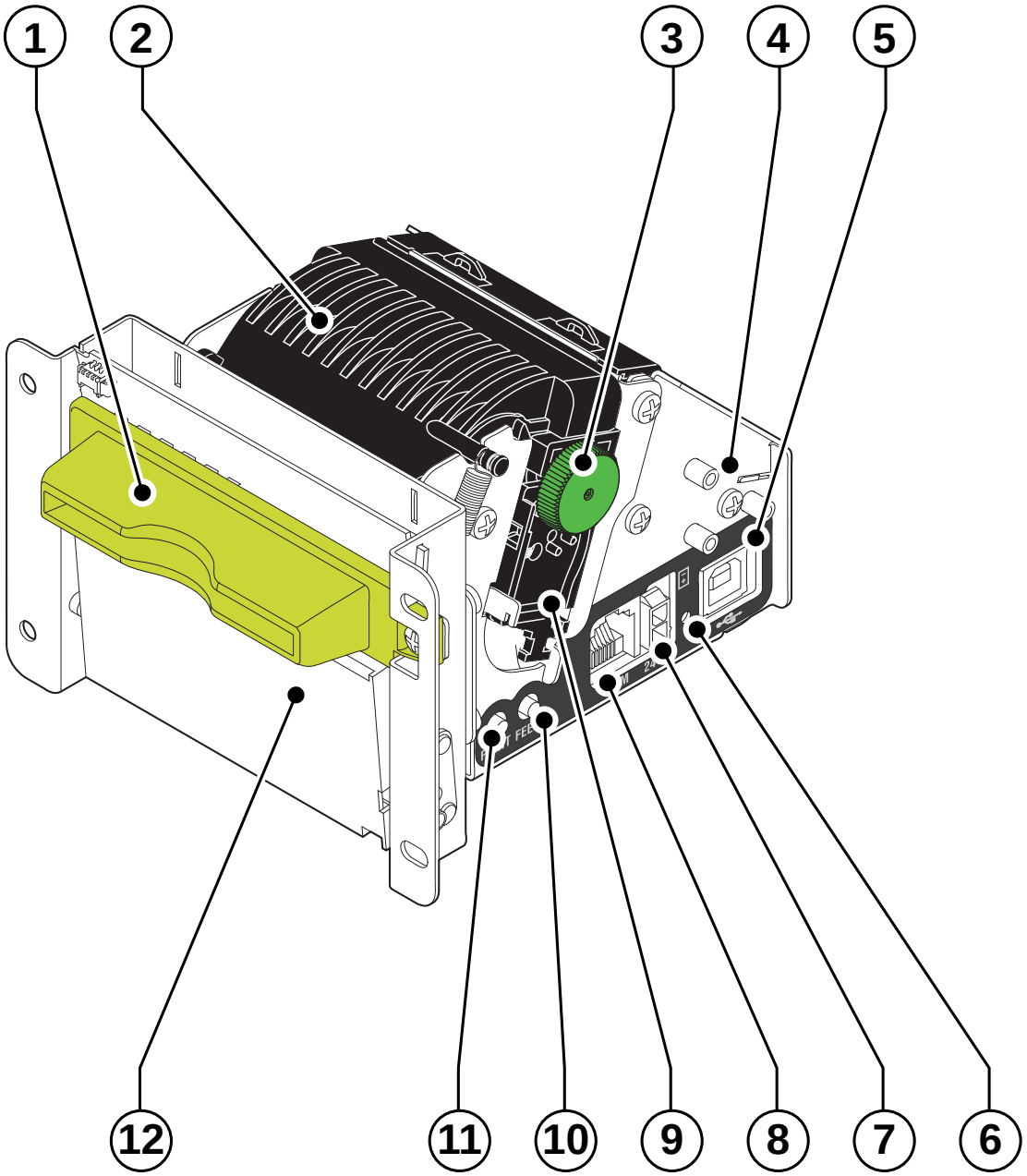
PRINTER COMPONENTS

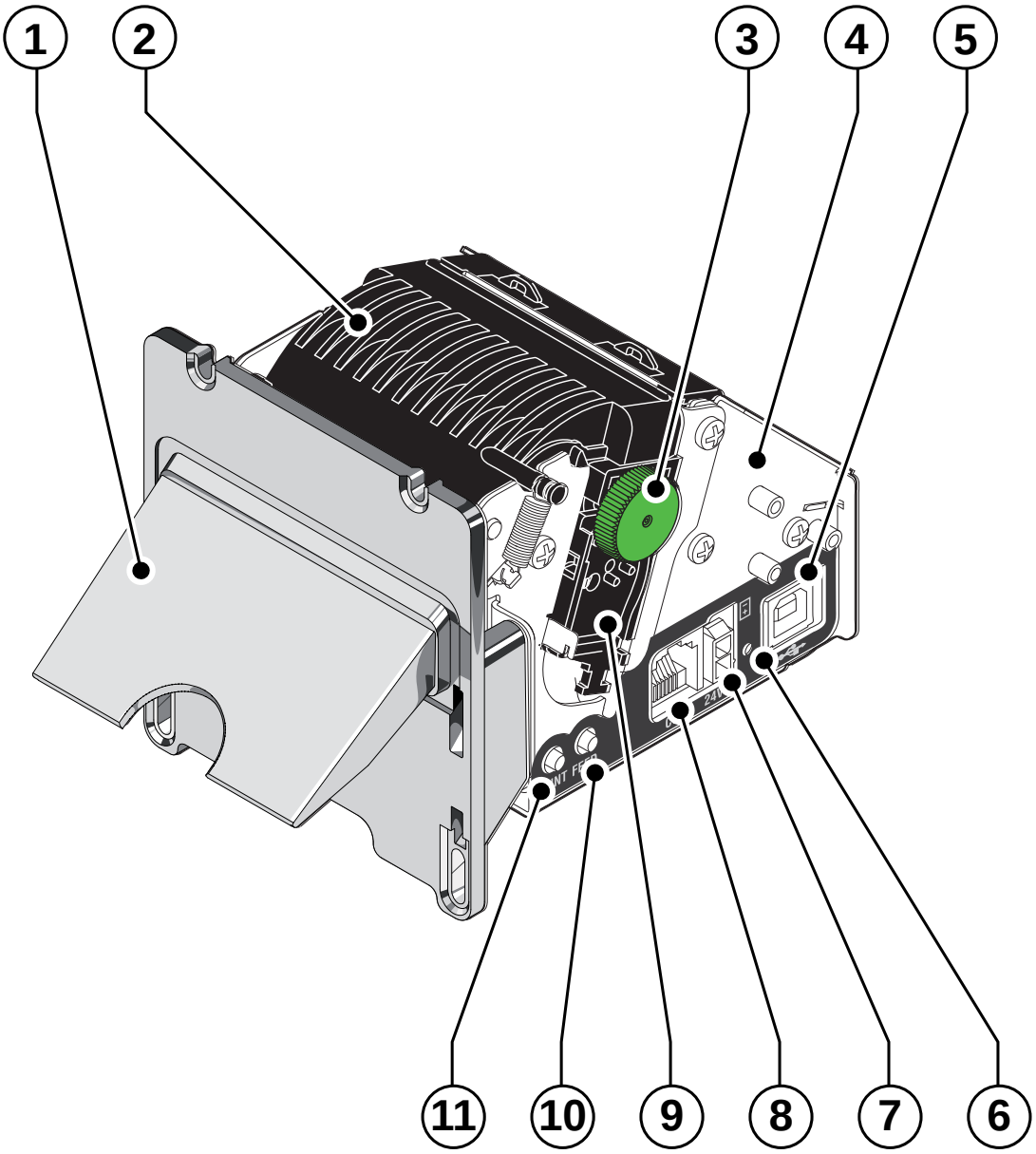
A. TG2460H-UA-0118 (model with cutter) - Front external view

1. Paper output
2. Inspection cover
3. Rubbed roller manual feed
4. Printer chassis
5. USB interface connector
6. Status led
7. Power supply connector
8. Serial interface connector
9. Printing mechanism
10. FEED key
11. PRINT key
12. Cutter



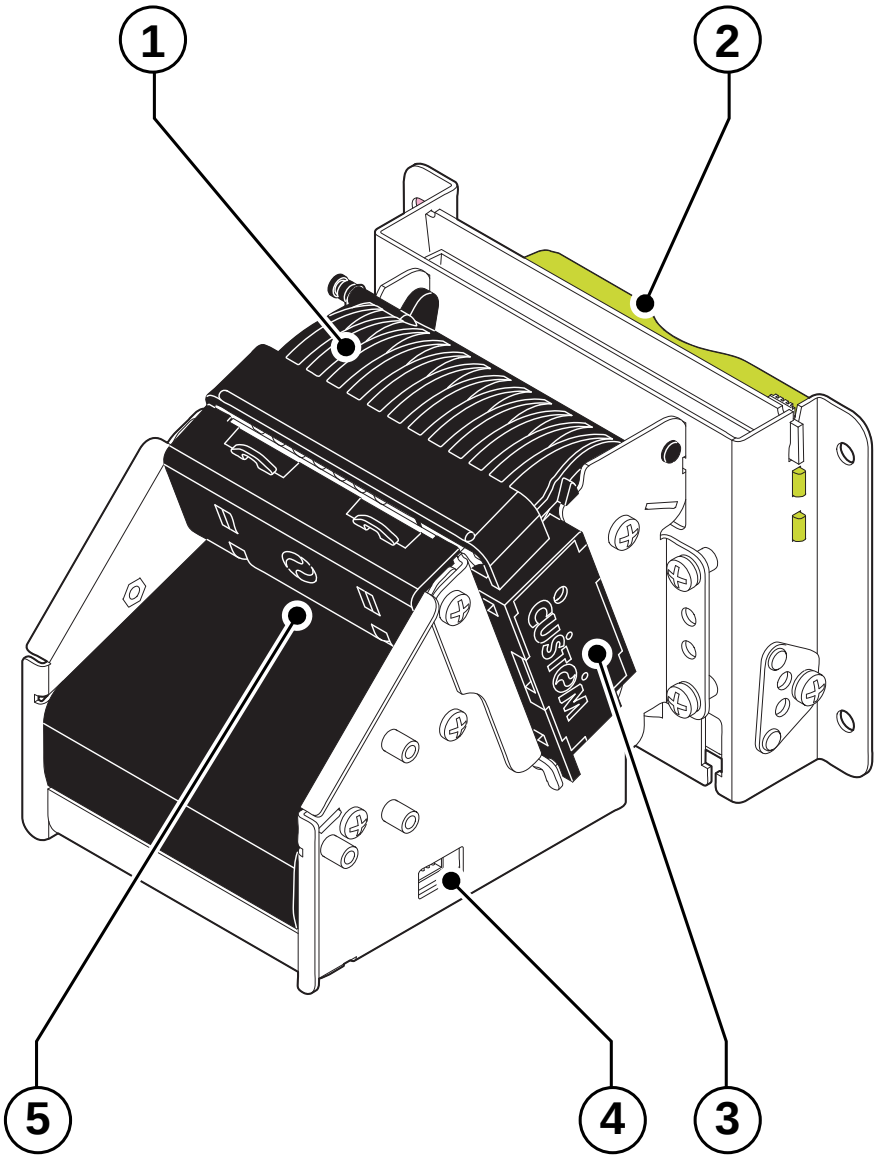
B. TG2460H-UN-0228 (model without cutter) - Front external view

1. Paper output
2. Inspection cover
3. Rubbed roller manual feed
4. Printer chassis
5. USB interface connector
6. Status led
7. Power supply connector
8. Serial interface connector
9. Printing mechanism
10. FEED key
11. PRINT key



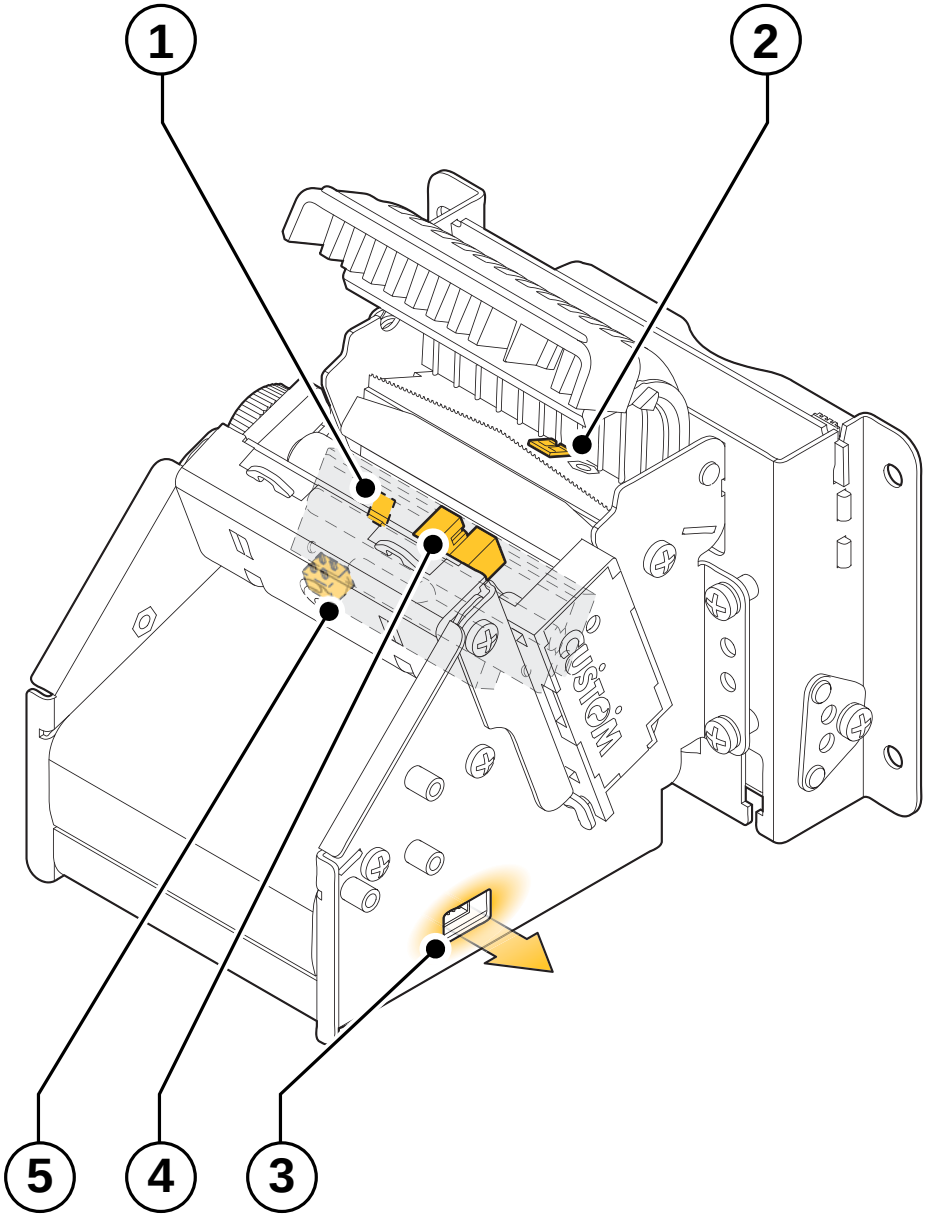
C. TG2460H (all models) - Rear view

1. Inspection cover
2. Paper output
3. Printing mechanism
4. Connector for external near paper end sensor (OPTIONAL)
5. Paper input



D. TG2460H (all models) - Internal view

1. Head temperature sensor (not visible to the user)
2. Paper presence sensor
3. Connector for external near paper end sensor (OPTIONAL)
4. Inspection cover open sensor
5. Notch sensor



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MANUAL CONTENTS

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

Chapter 1:	Contains the information required for correct printer installation and its proper use
Chapter 2:	Contains information on interface specifications
Chapter 3:	Contains technical specifications of the printer
Chapter 4:	Contains the character sets (fonts) used by the printer
Appendix A:	Contains information about accessories and spare parts for printer
Appendix B :	Contains the information for the alignment management of tickets

EXPLANATORY NOTES USED IN THIS MANUAL

N.B.
Gives important information or suggestions relative to the use of the printer.

WARNING
Information marked with this symbol must be carefully followed to guard against damaging the printer.

DANGER
Information marked with this symbol must be carefully followed to guard against operator injury or damage.

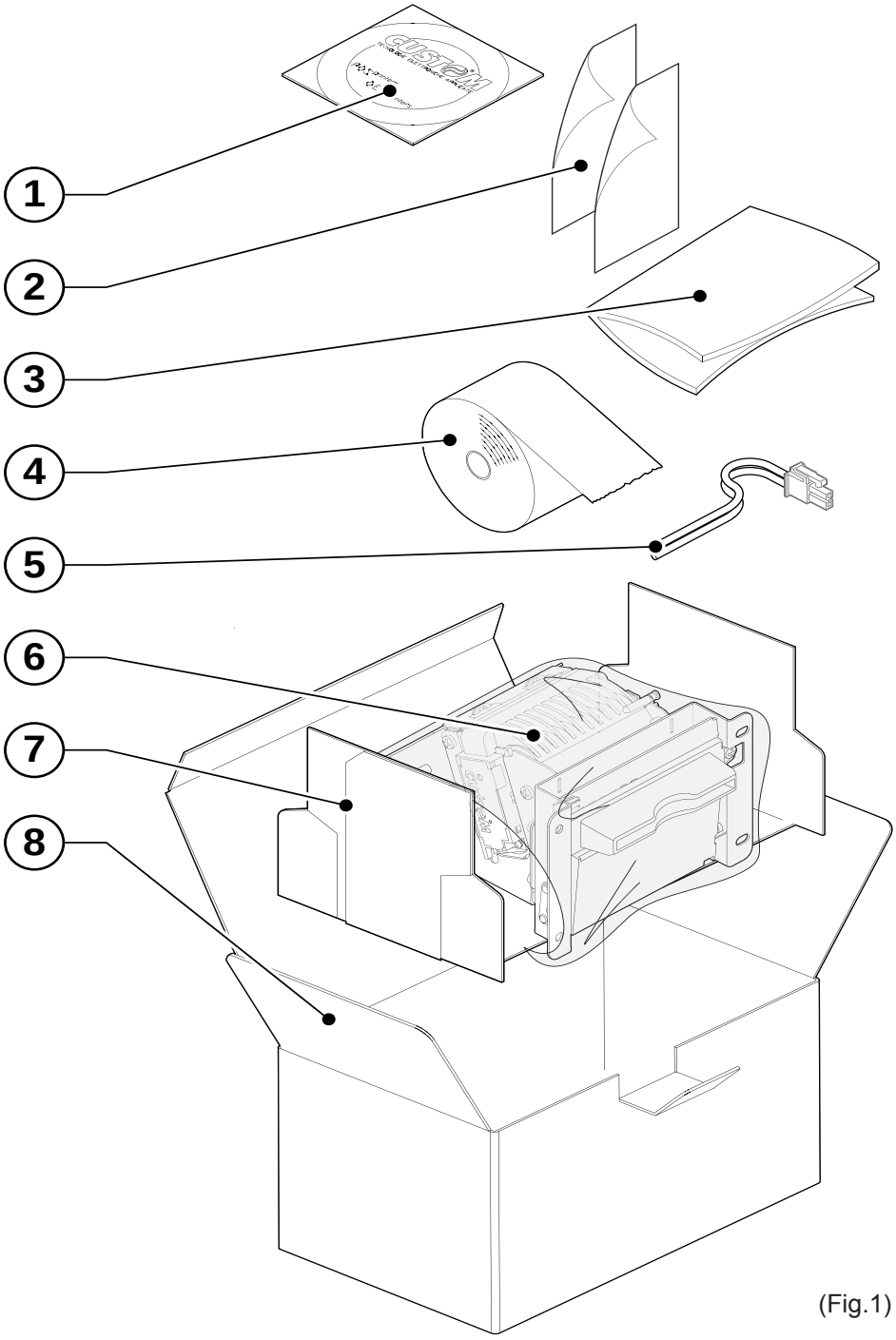
GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the printer.
- Before cleaning the printer, disconnect the power supply.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Do not use the printer on unstable surfaces that might cause it to fall and be seriously damaged.
- During the integration of the printer, we strongly warn to keep an adeguate paper loop outlet underneath the presenter, in order to allow the receipt being properly printed out.
- Only use the printer on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the printer is placed in such a way as to avoid damage to its wiring.
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- Do not block the ventilation openings.
- Do not introduce foreign objects of any kind into the printer as this could cause a short circuit or damage parts that could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:
    - A. The feed connector has been damaged.
    - B. Liquid has seeped inside the printer.
    - C. The printer has been exposed to rain or water.
    - D. The printer is not functioning normally despite the fact that all instructions in the users manual have been followed.
    - E. The printer has been dropped and its outer casing damaged.
    - F. Printer performance is poor.
    - G. The printer is not functioning.

UNPACKING THE PRINTER

Remove the printer from the box, taking care not to damage the packing materials which should be retained for future shipping/moving.
Make sure all components listed below are present and not damaged. If any part is missing and/or damaged, contact customer service.

1. CD-ROM
2. Installation instructions
3. User manual
4. Paper roll
5. Power supply cable
6. Printer
7. Foam packing shell
8. Box



(Fig.1)

- Open the printer packaging
- Take out the paper roll
- Take out the user manual and the installation instructions
- Take out the power supply cable
- Lift the protection packing shell and take out the printer.
- Keep the box packing materials in the event the printer must be transported/shipped in the future.

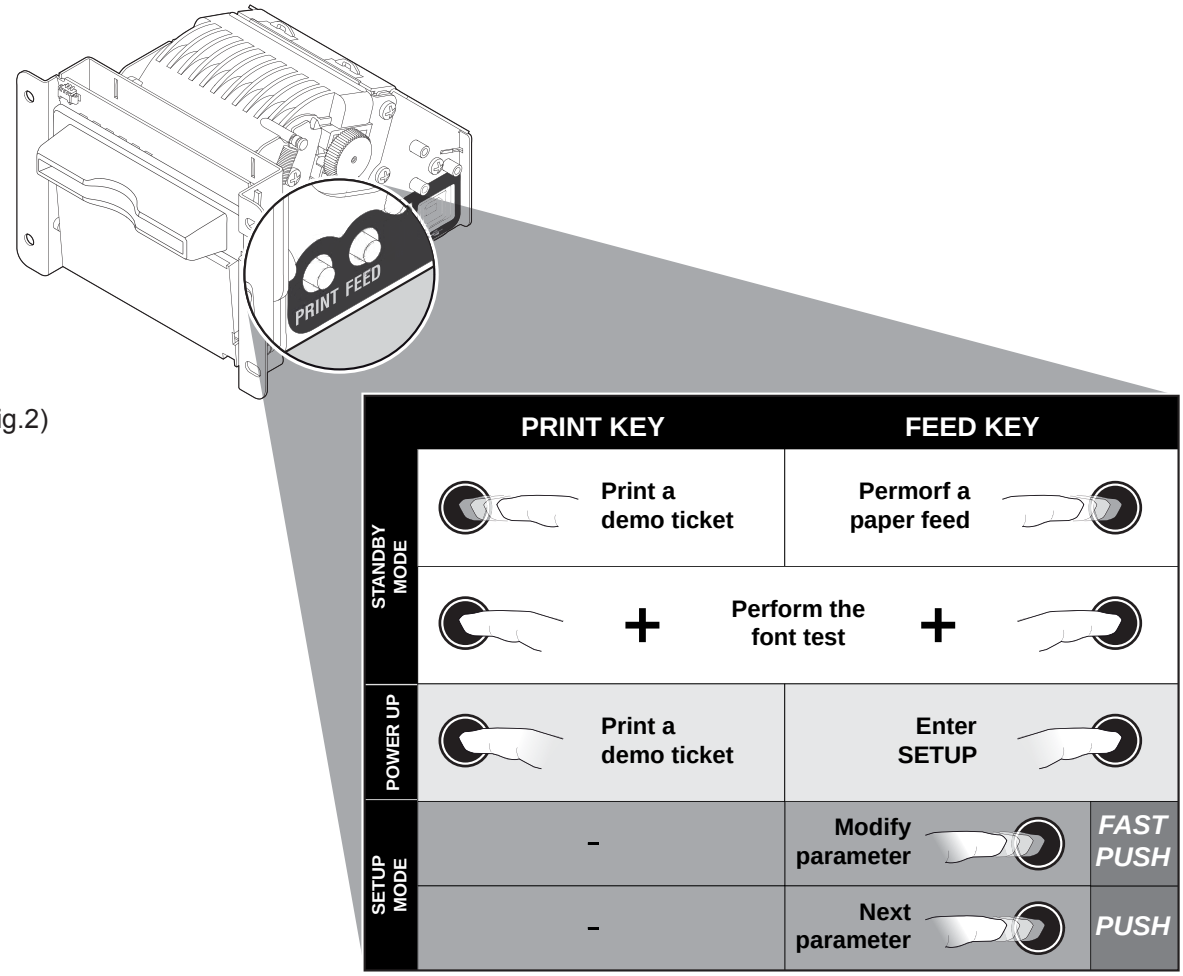
GENERAL FEATURES

Ultra compact thermal printer for dispensing 60 mm tickets width, easy to install (4 fastening holes and ticket presentation to user incorporated). Thanks to the exclusive anti-paper-jam system, the ticket will always be promptly dispensed to the user. Thanks to an innovative type of paper roll holding bracket, it is possible to accommodate up to 100 mm external diameter paper rolls, adapt the printer to the mechanical space requirements necessitated by the application (5 positions: upper, 45 degrees up, rear, 45 degrees low and lower) and manage the near paper end signal. It is equipped with a 203 dpi thermal print mechanism and it has both the serial RS232 and the USB interface.

PRINTER DESCRIPTION

The printer has an ABS casing and an inspection cover which opens to allow access to printing roller. Sideways the control panel is located and has a PRINT key, a FEED key and status LED.

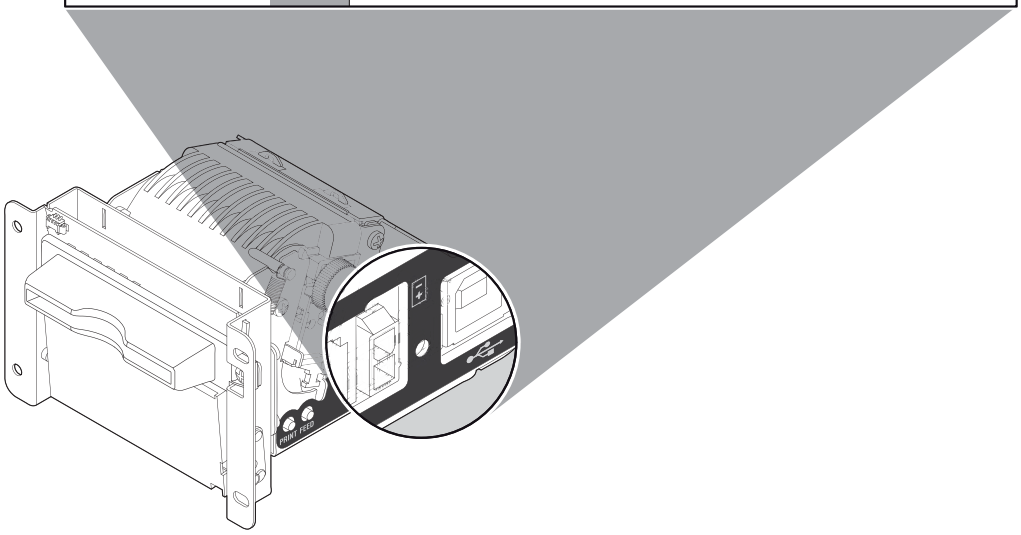
- PRINT KEY : When the PRINT key is pressed, the printer perform a demo ticket with pre-set length.
- FEED KEY : When the FEED key is pressed, the printer advances the paper. During power-up, if the FEED key is held down, the printer the SETUP report. Fast pressing the FEED key it's possible to change the parameters value and to print the parameter current value; pressing the FEED key it's possible to pass to the next parameter till the end of the SETUP.
- PRINT+FEED KEY When both the PRINT and the FEED keys are pressed during printer power up, the printer performs the FONT TEST.



(Fig.2)

• STATUS LED : It displays printer hardware status. In case of malfunction, flash frequency changing as shown in fig.3.

STATUS LED		DESCRIPTION
○ -	OFF	PRINTER OFF
● Green	ON	PRINTER ON : NO ERROR
RECOVERABLE ERROR		
☼ FLASHING Green	x 1	Receive data
	x 2	Print head temperature error
	x 3	Paper end
	x 4	Power supply voltage error
	x 5	Reception error (parity, frame error, overrun error)
	x 6	Misinterpret command
	x 7	Command reception time out
	x 9	Paper jam
	x 10	Near paper end (1)
UNRECOVERABLE ERROR		
☼ FLASHING Green	x 11	Cutter error (2)

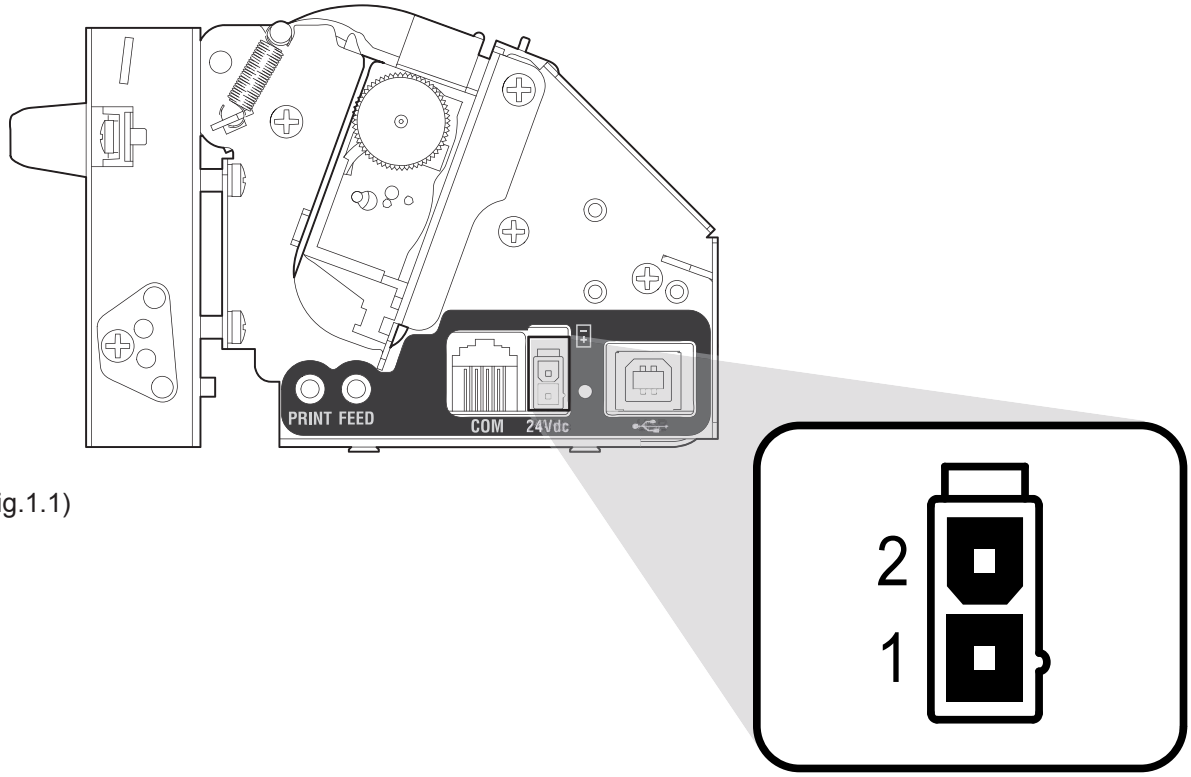


(Fig.3)

NOTE:
(1): Using TG2460H without the paper roll holder support, the status led continues to blink with this kind of flashing in order to communicate the Near Paper End error.
(2): Only for models with autocutter.

1.1 CONNECTIONS

1.1.1 Power supply



(Fig.1.1)

The printer is equipped with a 2 pin male molex connector series 5569 (Vertical), for the power supply (see fig.1.1). The connector pin configuration is as follows:

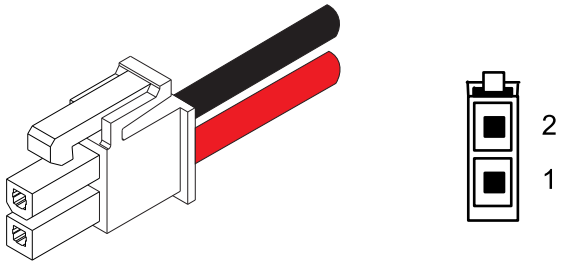
Model no. type: Header : 90° Molex series 5569 (no. 39-30-1020)
Housing : Molex series 5557 (no. 39-01-3022)

PIN	COLOUR	SIGNAL	DESCRIPTION
1	RED	+ 24 V	Power supply
2	BLACK	GND	Ground signal

(Tab.1.1)

WARNING
Respect power supply polarity.

This figure 1.2 shows the power supply cable included in the printer packaging:



(Fig.1.2)

MOLEX FEMALE CONNECTOR 2 PIN

OPPOSITE VIEW SIDE OF CABLE INSERTION

1.2 SELF-TEST

Printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed (see fig.1.3), the following information is given:

- Under **PRINTER TYPE** is given the printer model.
- Under **BOOT LOADER** is given the boot loader release.
- Under **HEAD VOLTAGE** is given the voltage of the head.
- Under **HEAD TEMPERATURE** is given the temperature of the head.
- Under **CUT COUNTER** (1) is given the number of cuts made.
- Under **POWER ON COUNTER** is givem the number of power-ups made.
- Under **PAPER PRINTER** is given the number of centimeters of paper printed.

PRINTER SETUP

PRINTER TYPE	=	TG2460-H
BOOT LOADER	=	rel 1.06
HEAD VOLTAGE [V]	=	23.06
HEAD TEMP. [°C]	=	36
CUT COUNTER (1)	=	273
POWERON COUNTER	=	176
PAPER PRINT [cm]	=	11160

Baud Rate .....:	**115200 bps**
Data Length .....:	**8 bits/chr**
Parity .....:	**None**
Handshaking .....:	**Hardware**
Autofeed .....:	**CR Disabled**
USB Address N .....:	**0**
Print Mode .....:	**Normal**
Code Table .....:	**PC437**
Chars / line .....:	**A=11 B=15 cpi**
Speed / Quality.....:	**Normal**
Print Width.....:	**56 mm**
Notch Align. .....:	**Enabled**
Notch ThresH.(2).....:	**0.75V**
Notch Dist.mm (2) (3) .....:	**+00.0**
Print Density.....:	**0 %**

[Feed PUSH] *Enter setup*
[Feed FAST PUSH] *skip setup*

(Fig.1.3)

1.3 CONFIGURATION

The printer enables the confi guration of the printer default parameters pressing both the PRINT and the FEED keys during the printer power up. The parameters affected during confi guration are:

- **Baud Rate**: 115200, 57600, 38400, 19200 [D], 9600, 4800, 2400, 1200.
- **Data length**: 7, 8 [D] bits/car.
- **Parity**: None [D], even, odd.
- **Handshaking**: XON/XOFF [D], Hardware.
- **Autofeed**: CR disabled [D], CR enabled.
- **USB Address** : 0 [D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Print mode**: Normal [D], Reverse.
- **Code Table**:
  TG2460H: PC437[D], PC850, PC860, PC863, PC865, PC858, PC866, VISCII.
  TG2460H (opz.-0104): PC437[D], PC850, PC860, PC863, PC865, PC858, GB2312
- **Chars/line**: A=11 B=15 col.[D], A=15 B=20 col.
- **Speed/Quality**: Normal [D], High Speed.
- **Print Width:** 52 mm, 56 mm [D].
- **Notch Alignment:** Disabled [D], Enabled.
- **Notch Treshold [(2)]:** 0.75V, 1.00V, 1.25V[D], 1.50V, 1.75V, 2.00V, 2.25V.
- **Notch Distance [mm x 10][(2) (3)]:** 0[D], 1.
- **Notch Distance [mm x 1][(2) (3)]:** 0[D], 1, 2.
- **Notch Distance [mm x .1][(2) (3)]:** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Print Density:** -50%, -37%, -25%, -12%, 0%[D], +12%, +25%, +37%, +50%.

General note:
The parameters marked with the symbol [D] represent the default values.
Settings remain active even after the printer has been turned off.

NOTE:
(1): Only for models with auto-cutter.
(2): If the “Notch Position” parameter is est to “Disabled”, this parameter doesn’t appear in the “Printer Setup” report.
(3): The “Notch distance” parameter represents the distance in mm from the upper margin of the ticket to the black mark on ticket. For example, to set notch distance to 11 mm, modify the following parameters in order to obtain the desired values as indicated:

Notch Dist. [mm x 10]: 1
Notch Dist. [mm x 1] : 1
Notch Dist. [mm x 1] : 0

The settings made are saved on the EEPROM (non volatile memory). During the setup routine the printer prints out the setup report and will remain in standby until another key is pressed or characters are received through the printer communication port. After this, each time the PRINT key is pressed, the parameter is modified and its current value is printed. Once the required value has been obtained, press the FEED key to proceed to the next parameter, and so on. Once all the parameters have been run through, the printing of a message signals the end of the setting procedure.

1.4 HEXADECIMAL DUMP

(Fig.1.4)

This function is used to display the characters received from the communications port; the printer prints out both the hexadecimal code received as well as the corresponding ASCII code (see fig.1.4).
Once the autotest routine has finished, the printer enters Hexadecimal Dump mode. The scanner remains in standby until a key is pressed or characters are received from the communications port; for every 24 characters received it prints hexadecimal values and ASCII codes (if the characters appear underlined, it means the receive buffer is full). Shown below is an example of a Hexadecimal Dump:

HEXADECIMAL DUMP

```
31 32 33 34 35 36 37 38     12345678
39 30 31 32 33 34 35 36     90123456
37 38 39 75 69 73 64 66     789uisdf
68 6B 6A 73 64 68 66 68     hkjsdhfh
73 64 66 6B 6A 68 73 64     sdfkjhsd
66 73 64 66 6B 68 6A 77     fsdfkhjw
65 69 6F 79 75 77 71 65     eioyuwqe
6F 72 69 75 77 65 72 69     oriuweri
6F 75 77 65 72 69 6F 75     ouweriou
77 65 72 69 6F 75 77 65     weriouwe
72 69 6F 75 77 65 72 68     riouwerh
6B 6C 73 64 66 68 6B 73     klsdfhks
64 66 6B 73 64 66 68 6A     dfksdfhj
73 64 66 6B 6A F2 73 64     sdfkj?sd
66 6B F2 6A 73 68 64 66     fk?jshdf
6A 6B 6C 68                 jklh
```

1.5 MAINTENANCE

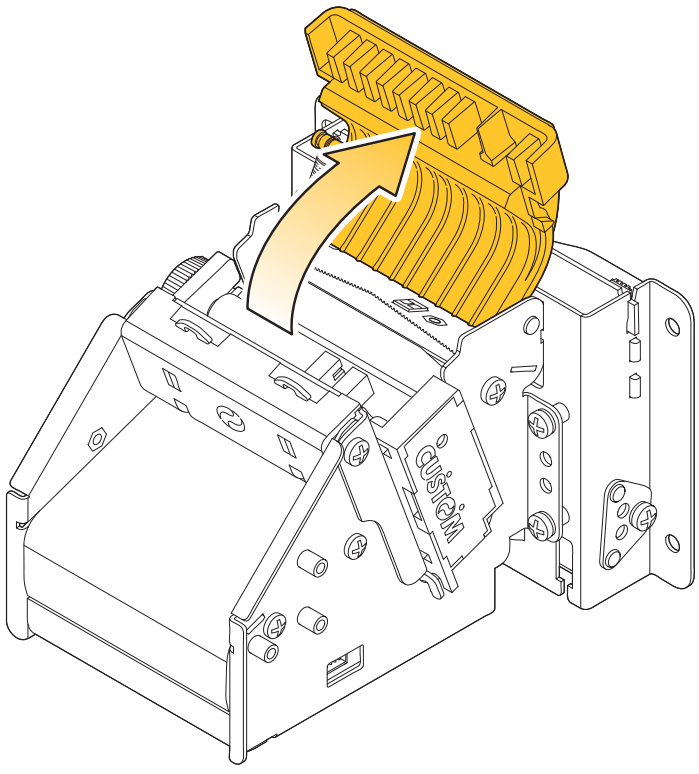
WARNING
Make sure no water or other liquids seep inside the printer.

BEWARE
Before any type of work is done on the machine, disconnect the power supply cord from the mains outlet.

ATTENTION
Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

1.5.1 Open the printer

To open the printer, rotate the inspection cover to the maximum opening position (see fig.1.5).

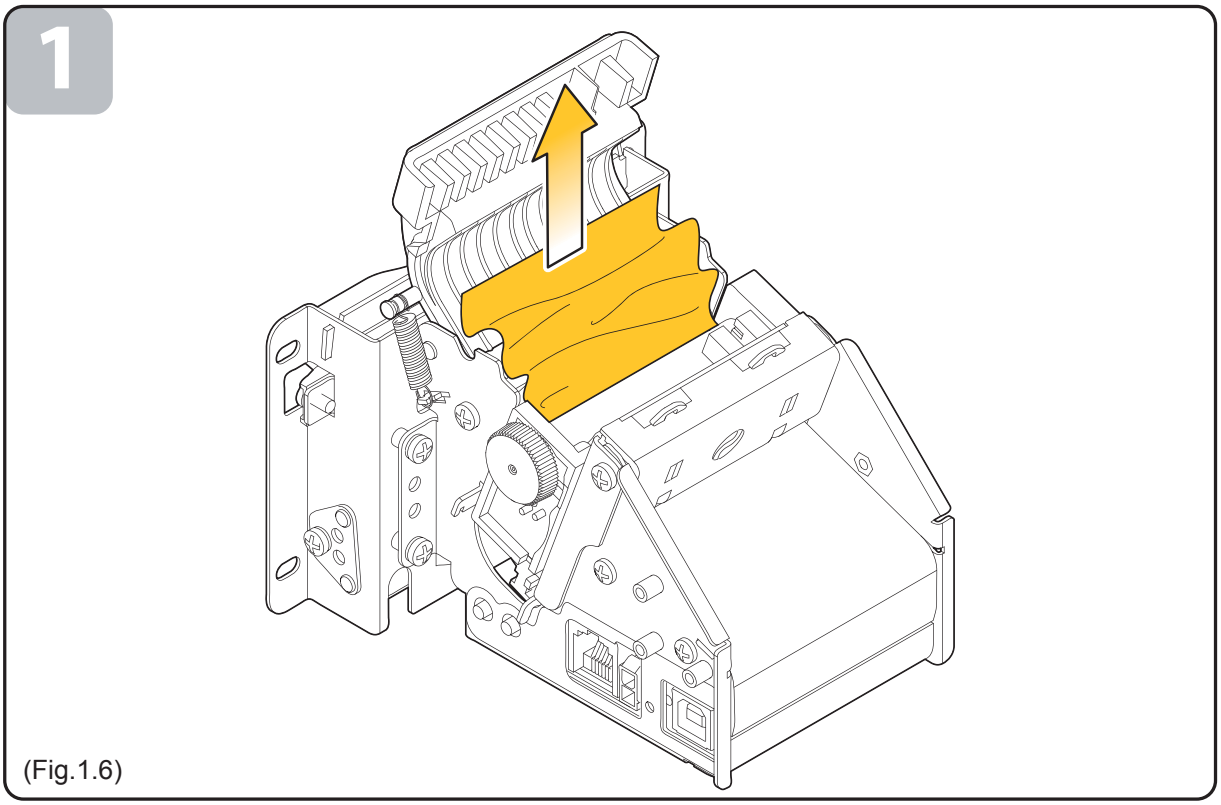


(Fig.1.5)

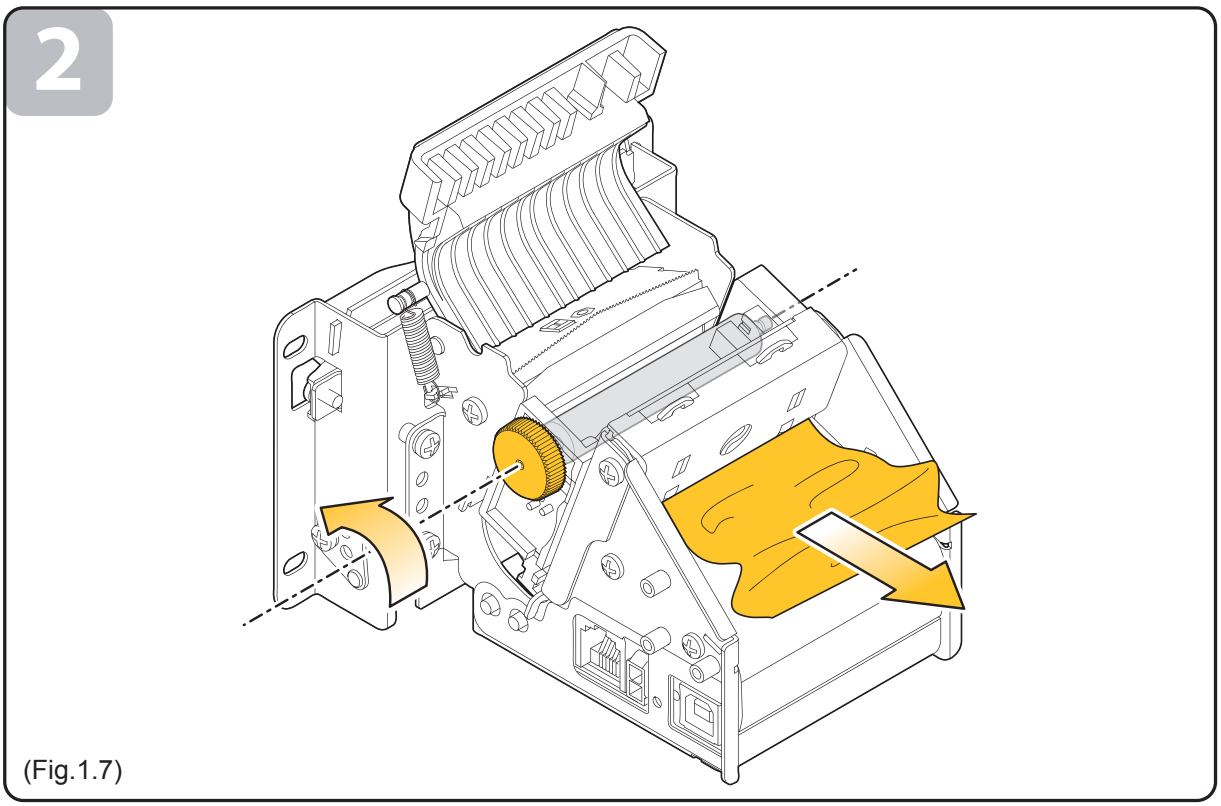
NOTE : After each maintenance operation is recommended to check and remove possible scraps of paper.

1.5.2 Paper jam

In case of paper jam proceed as follows:
1. Lift the inspection cover and remove possible scraps of paper (see fig.1.6).
2. Rotate the rubbed roller anticlockwise to eject the paper out from the printing mechanism (see fig.1.7).



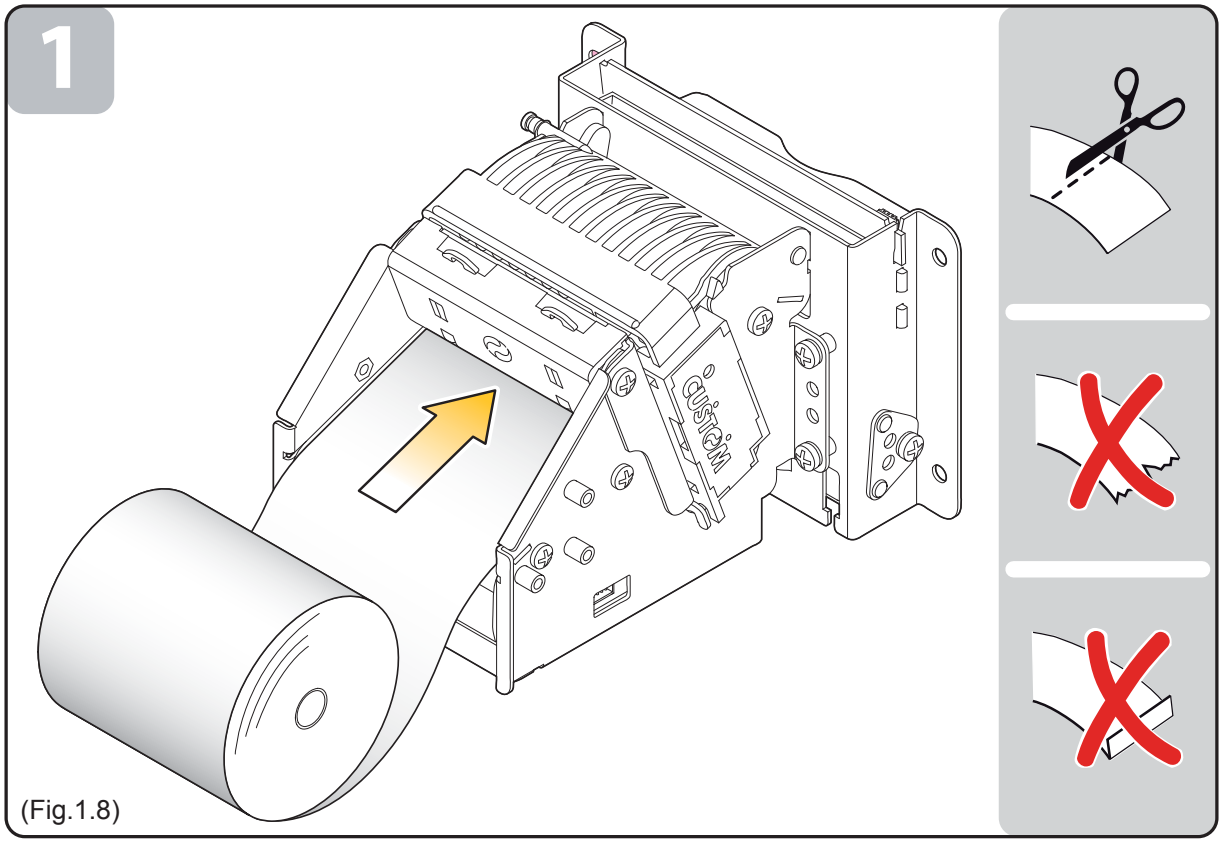
(Fig.1.6)



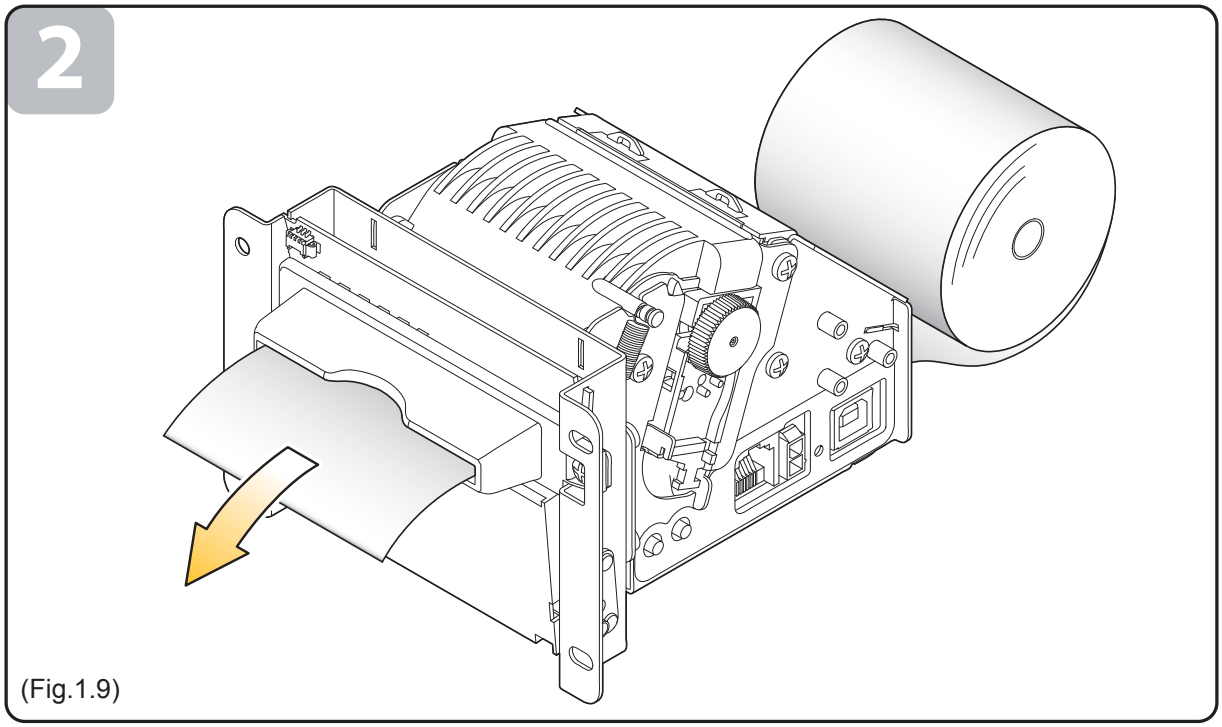
(Fig.1.7)

1.5.3 Changing the paper roll

To change the paper roll proceed as follows:
1. Insert the paper into the paper infeed opening so that it unrolls in the direction shown in fig.1.8.
2. Wait for the paper to load automatically (see fig.1.9).



(Fig.1.8)

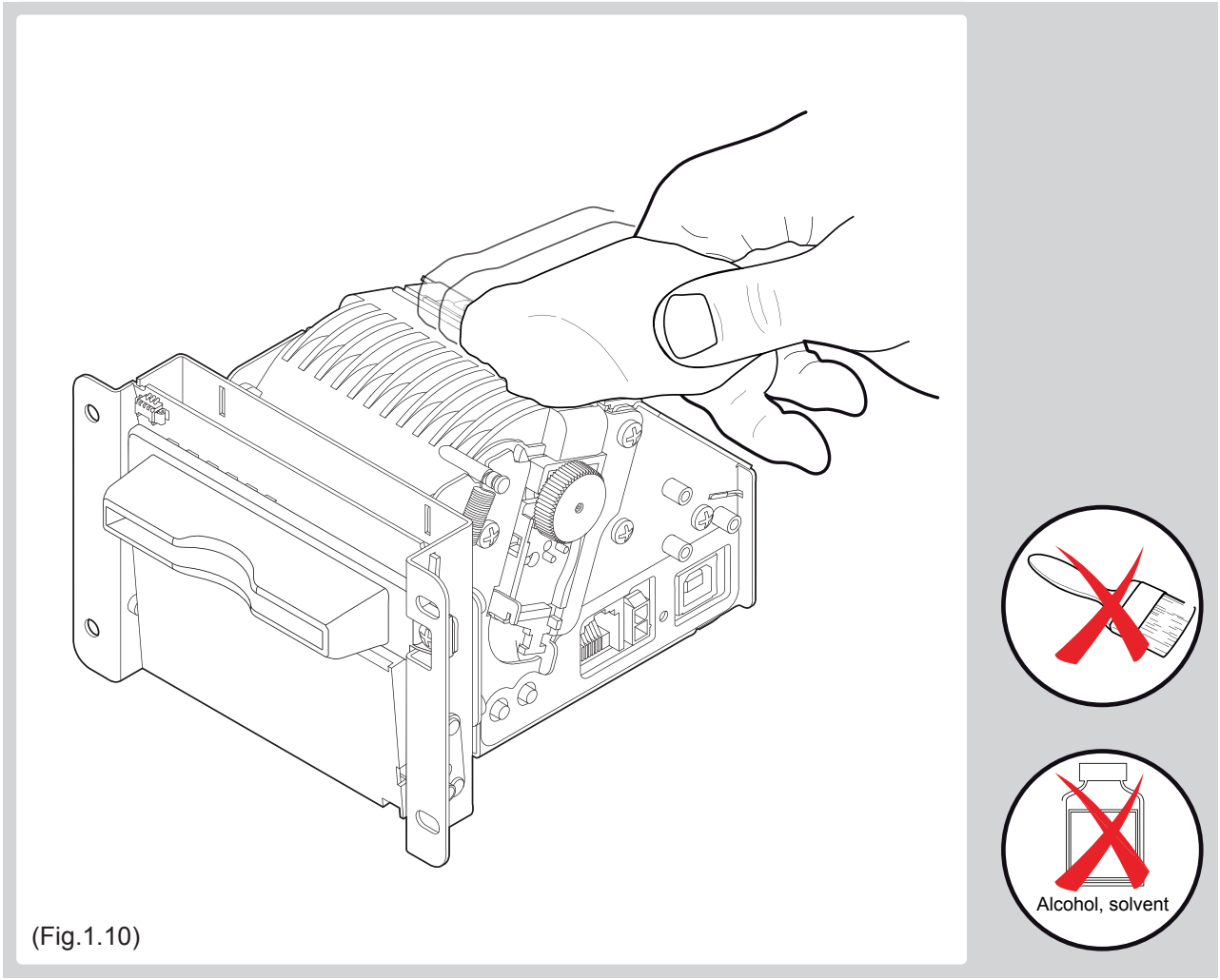


(Fig.1.9)

WARNING
Before inserting the paper, make sure the cut is straight (see fig.1.8).

1.5.4 Cleaning the printer case

The user is responsible for cleaning the printer case. To clean the unit, use compressed air or a soft cloth. Do not use alcohol, solvents or stiff brushes (see fig.1.10).

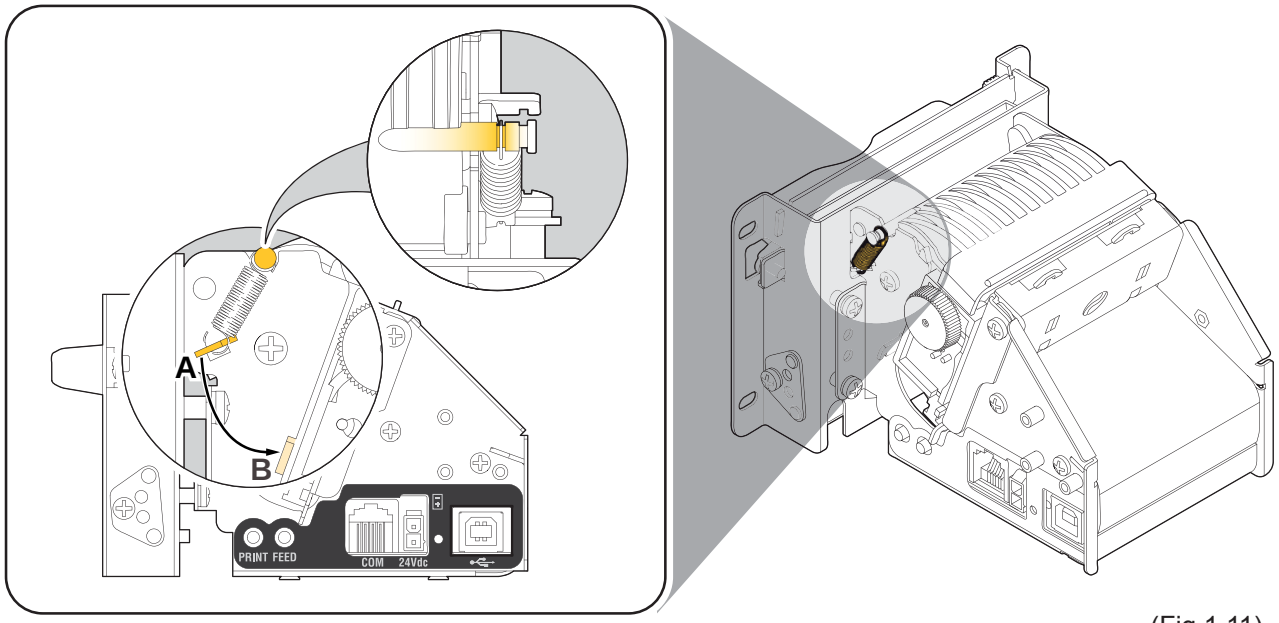


(Fig.1.10)

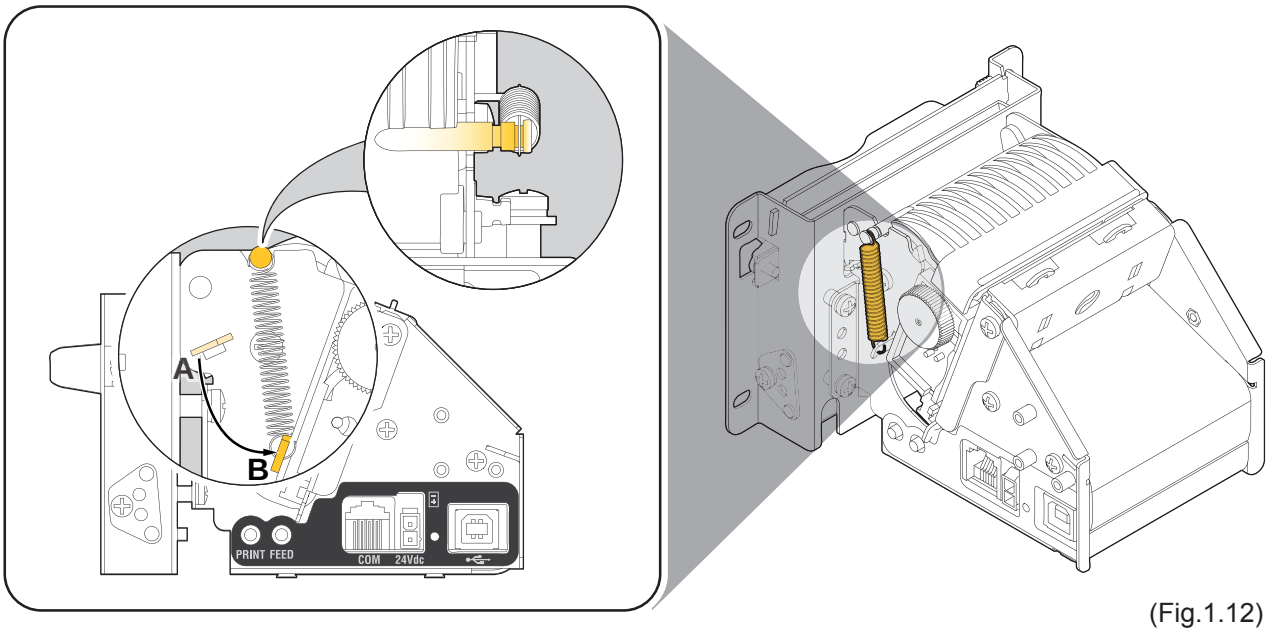
1.5.5 Note for installation in the upside down position

To install the printer in the upside down position proceed as follows:
1. Release the lower side of the spring for the inspection cover from the position A as shown in fig.1.11.
2. Place the lower side of the spring in the position B as shown in fig.1.12.

Be careful to move the upper side of the spring from the internal to the external groove on the pin of the inspection cover (see fig.1.11 and fig.1.12).

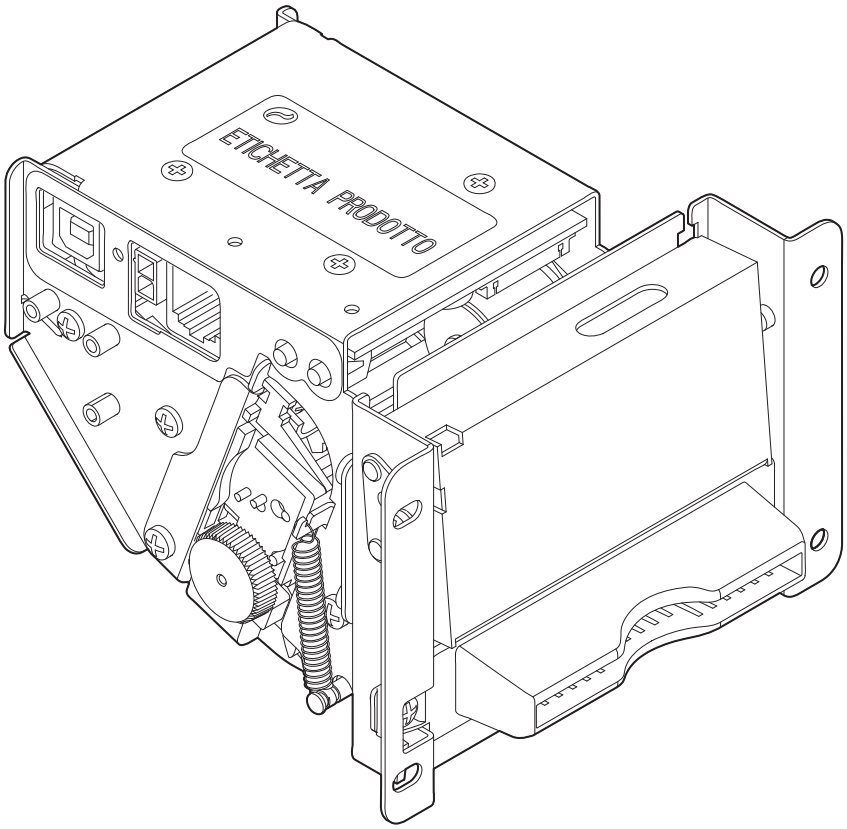


(Fig.1.11)



(Fig.1.12)

The printer is ready to be installed in the upside down position as shown in fig.1.13.



(Fig.1.13)

NOTE : The described operations are valid for all TG2460H models.

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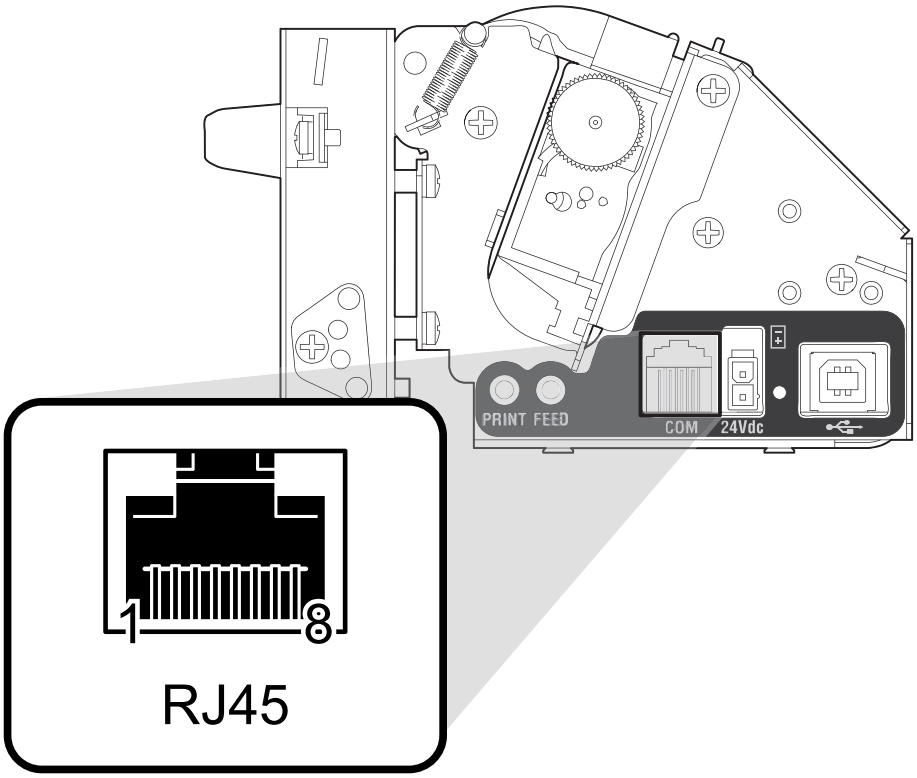
2.1 RS232 SERIAL INTERFACE



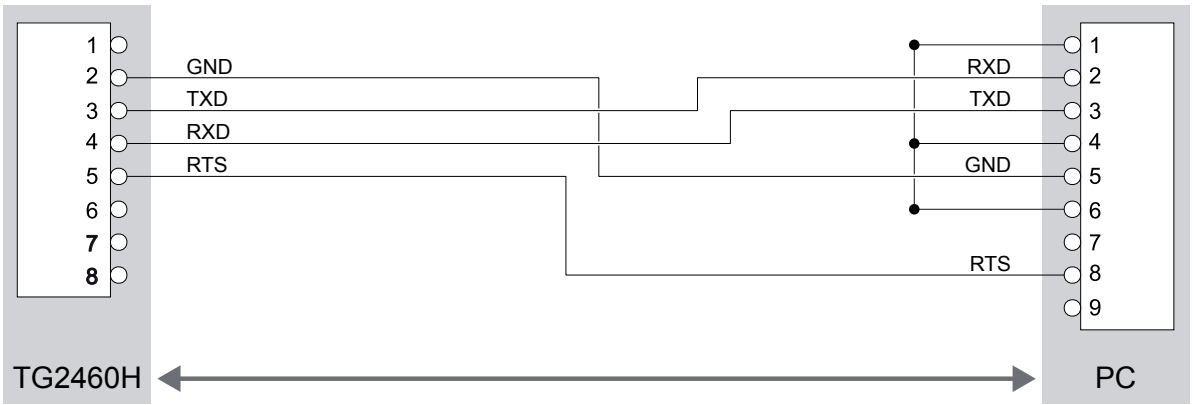
(Fig.2.1)

The printer is equipped with a serial RS232 interface with a female RJ45 connector (see fig.2.1). Refer to the table below for the connector pin signals:

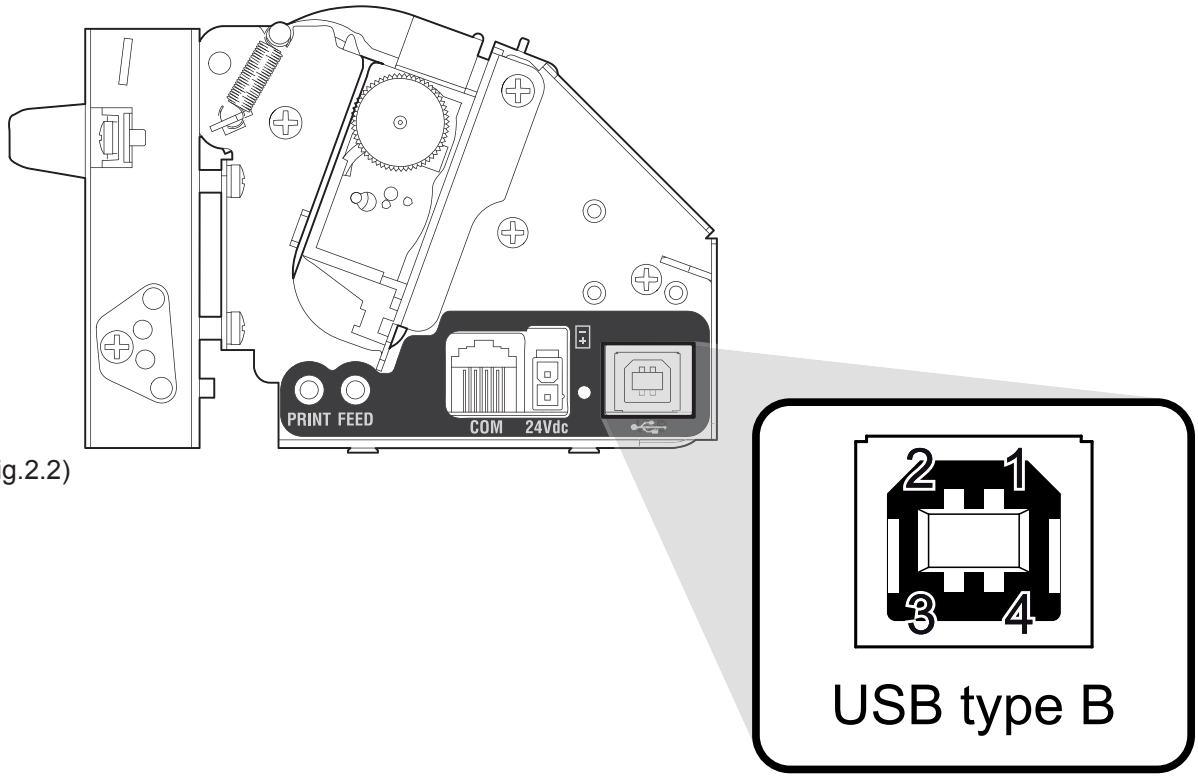
PIN	SIGNAL	DESCRIPTION
1	N.C.	Not connected
2	GND	Ground signal
3	TXD	Data transmission
4	RXD	Data reception
5	RTS	Ready to send
6	N.C.	Not connected
7	N.C.	Not connected
8	N.C.	Not connected

(Tab.2.1)

The diagrams below show a sample connection between printer and PC using a 8 pin male RJ45 connector and a 9 pin female connector:



2.2 USB INTERFACE



(Fig.2.2)

The printer is equipped with USB interface complies to USB 1.1 specifications that is:

• Communication speed equal to 12 Mbit/sec.
• Type of connector “Receptacle series B”.

The signals on the pins of the USB connector are as follows:

PIN	SIGNAL	DESCRIPTION
1	VBUS	N.C.
2	D-	Data -
3	D+	Data +
4	GND	Ground signal

3.1 TECHNICAL SPECIFICATIONS

Table 3.1 gives the main technical specifications for the printer.

Interfaces	RS232 Serial	USB
Communication speed	From 1200 to 115.200 bps	12 Mbit/sec
Sensors	Head temperature, paper jam, paper presence on output, notch presence OPTIONAL : external near paper end	
Printing Driver	Windows™ , XP, VISTA	
Emulation	ESC/POS	
PRINTER SPECIFICATIONS		
Print method	Thermal fixed head (8 dot/mm)	
Resolution	203 DPI (8 dot/mm)	
Printing direction	Normal, 180°	
Printing format	Height / width 1 to 4, bold, reverse, underlined, italic.	
Character fonts	PC437, PC850, PC860, PC863, PC865, PC858, PC866, VISCII opz.-0104: PC437, PC850, PC860, PC863, PC865, PC858, GB2312	
Printing speed (1)	high speed : high quality :	140 mm/sec 100 mm/sec
PAPER SPECIFICATIONS		
Type of paper	Thermal rolls. Heat-sensitive side on outside of roll	
Paper width	60 mm ± 0,5	
External roll diameter	max Ø100 mm (with external paper holder support)	
Recommended types of paper	from 55 g/m^2 to 100 g/m^2 *(KANZAN KF50 or KP460, MITSUBISHI PG5075 or TL4000)*	
Paper thickness	0,63 ±0,005 mm (KF50)	
Internal roll core diameter	13 mm	
Core thickness	2 mm (+1 mm)	
Core type	Cardboard or plastic	
Minimum ticket length (2)	90 mm	
ELECTRICAL SPECIFICATIONS		
Power supply	24 Vdc ± 10%	
Medium consumption (1)	0.7 A	
Standby consumption	55 mA	
ENVIRONMENTAL CONDITIONS		
Operating temperature	-20°C ÷ +70°C	
Relative humidity	10% - 85% w/o condensation	
Storage temperature / Humidity	-20°C - 70°C / 10% - 90%	
Weight [gr.]	625 (without paper roll)	
Options	Paper holder support	

(Tab.3.1)

NOTE : (1) Referring to the standard CUSTOM receipt (L=10cm, Density = 12,5% dots on).
(2) Only for model without cutter.

ESC/POS™ EMULATION			
Character density	11cpi	15cpi	20cpi
Number of columns	24	32	44
Printing speed			
Lines / sec	30	30	30
Characters / sec	720	960	1320
Character (L x H mm)			
Normal	2,2 x 3	1,7 x 3	1,2 X 3
Character set	3		

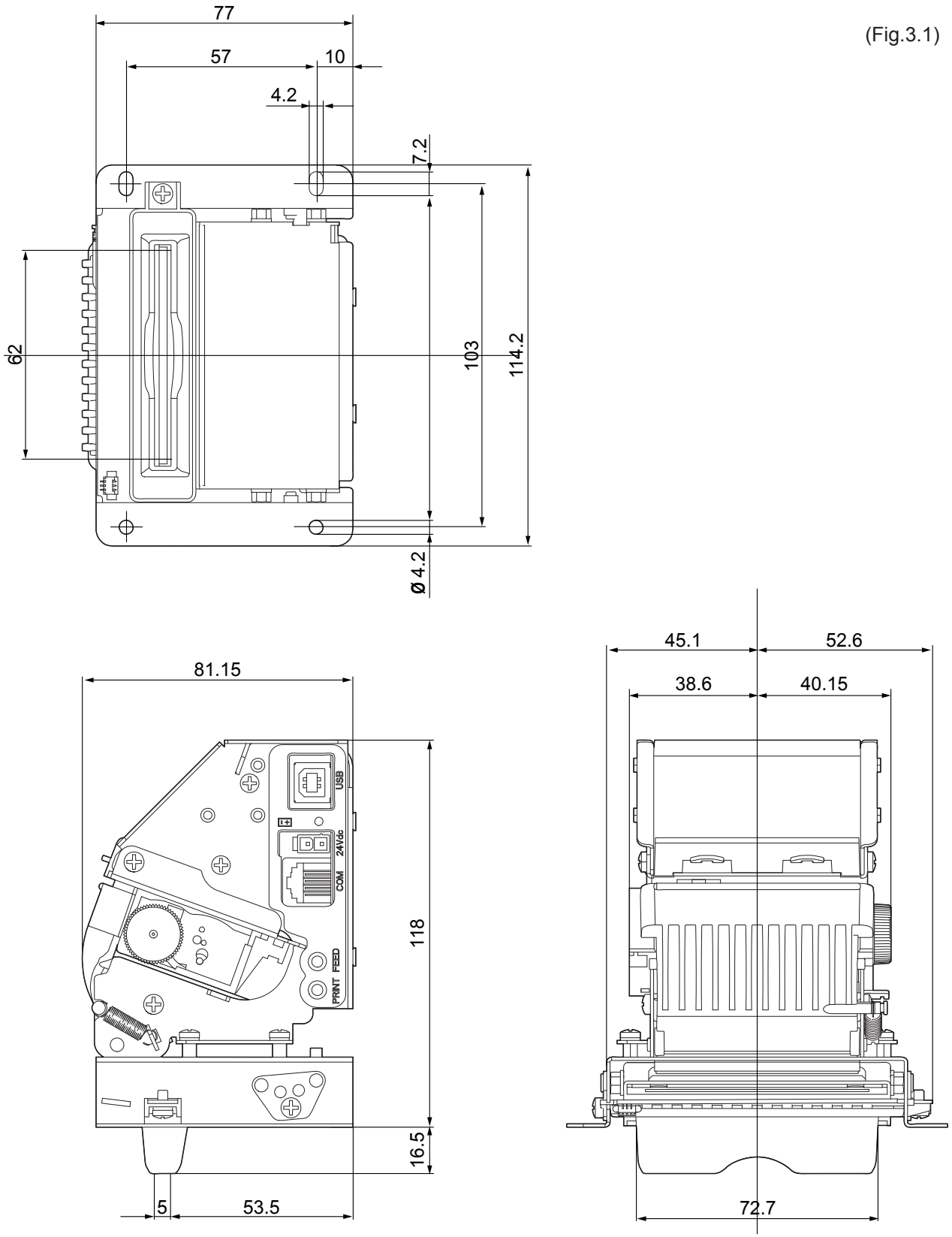
(Tab.3.2)

NOTE : Referred to the default paper width (56mm).

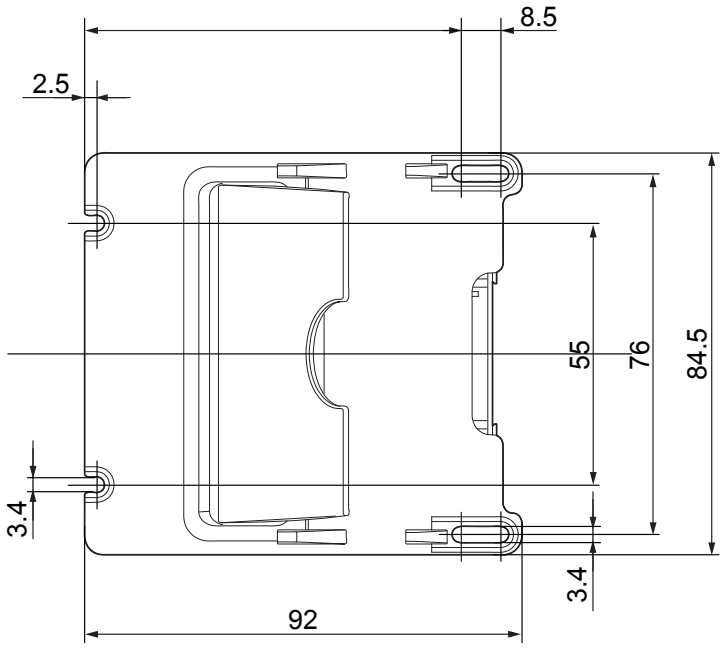
3.2 DIMENSIONS

The fig.3.1 shows the dimensions for TG2460H-UA-0118 (model with cutter)

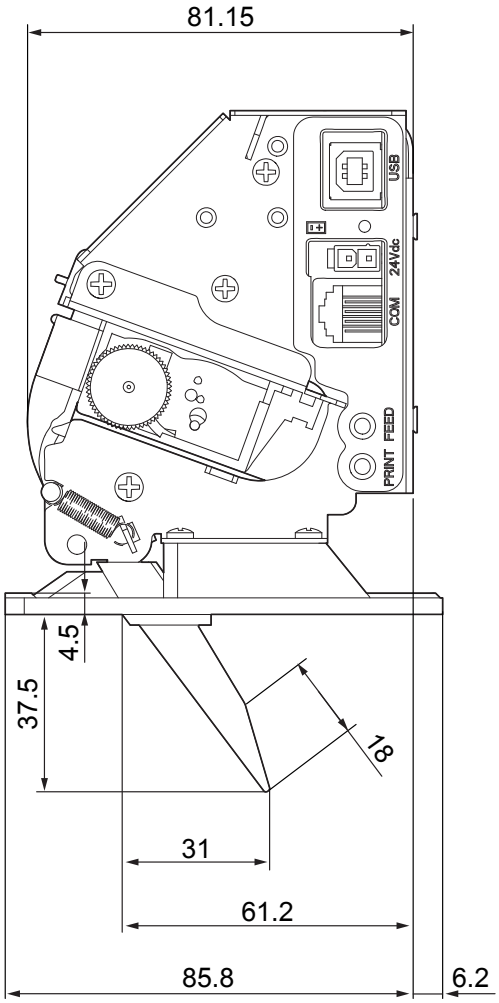
(Fig.3.1)

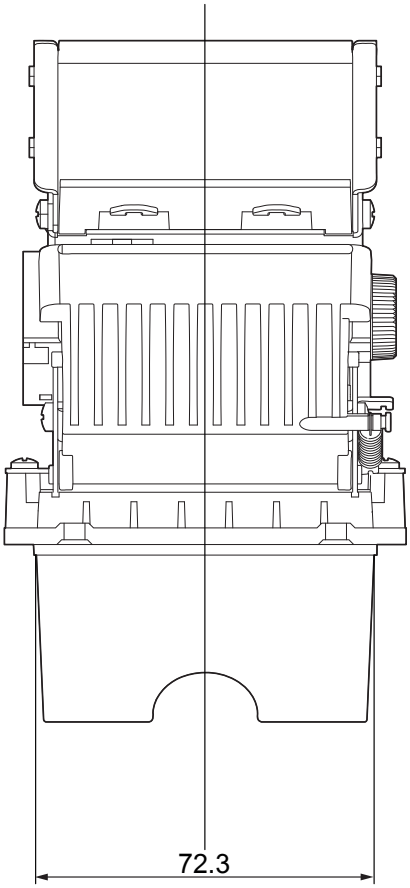


The fig.3.2 shows the dimensions for TG2460H-UN-0228 (model without cutter)



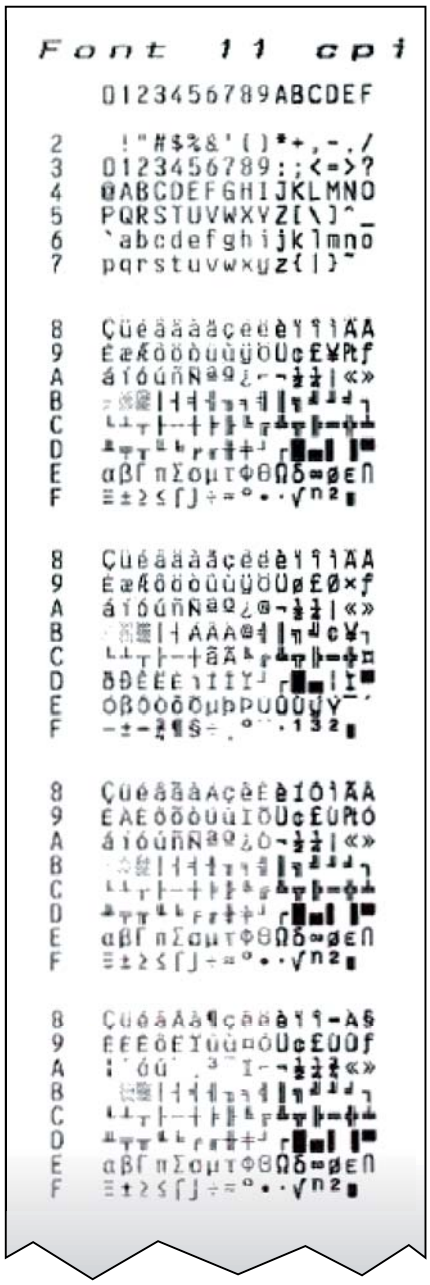
(Fig.3.2)





4.1 CHARACTER SETS

The printer has 2 fonts of varying width (11, 15 and 20 cpi) which may be accessed through programming (section 1.3) or control characters. Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858, PC866, VISCII.



PC437
(Usa, Standard, Europe)

PC850
(Multilingual)

PC860
(Portuguese)

PC863
(Canadian, French)

PC865
(Nordic)

PC858
(Euro symbol)

PC866
(Cyrillic)

VISCII
(Vietnamese)

(Fig.4.1)

To print the Euro (€) symbol, the command sequence is: $1B, $74, $13, $D5.

The TG2460H version with Chinese font (option -0104) has the simplified font GB2312 characters set (about 7000) as shown for example in fig.4.2.

(Fig.4.2)

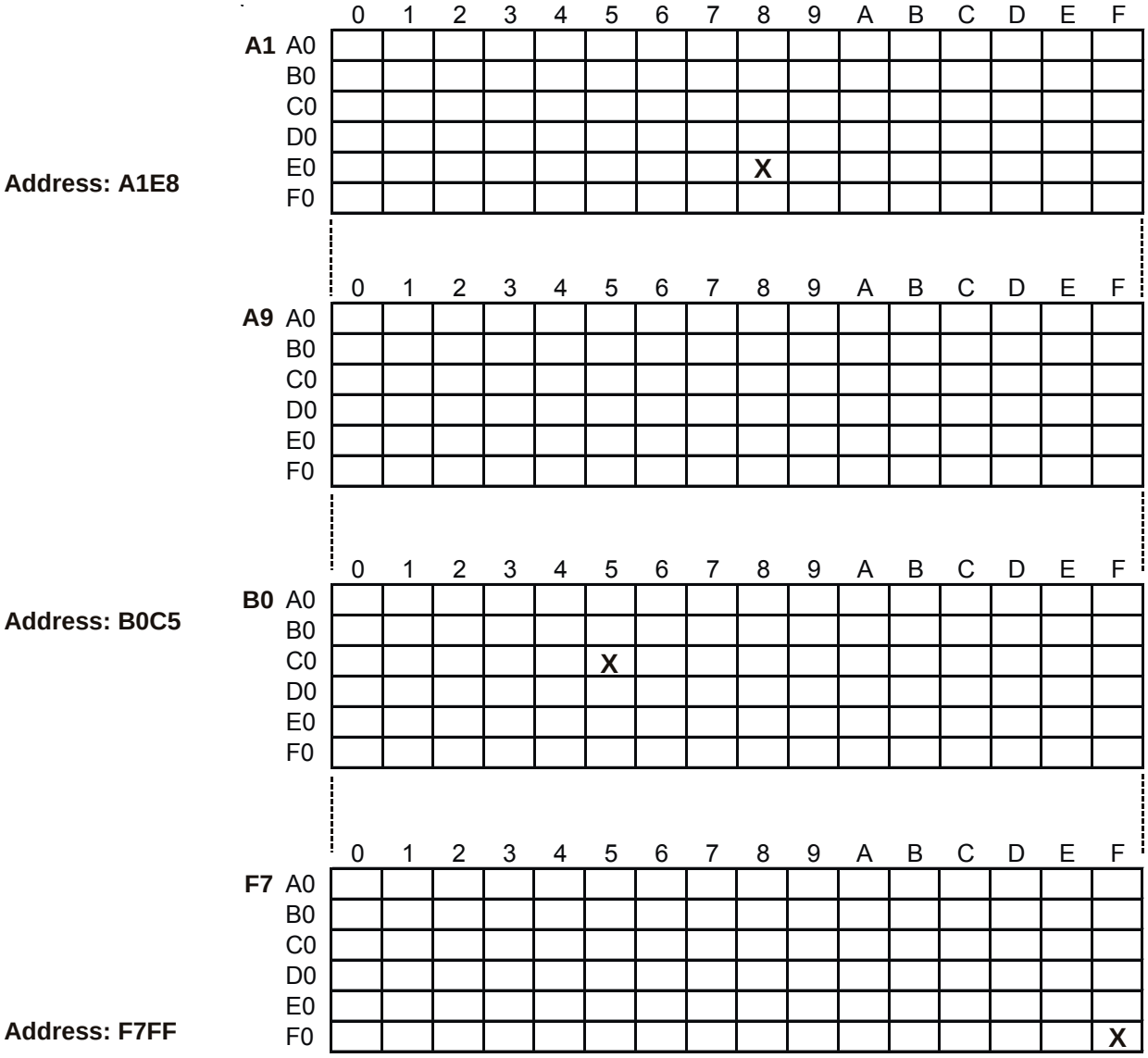
With this version must be send two bytes to addressing characters: the first byte identifies the table, the second byte identifies the row and column in the table. In the fig.4.3 is reported an example of characters mapping; the X symbol identifies the character to address.

1st byte

Range: 161 ≤ n ≤ 169 (A1 ÷ A9),
176 ≤ n ≤ 247 (B0 ÷ F7),

2nd byte

Range: 160 ≤ m ≤ 255 (A0 ÷ FF).



(Fig.4.3)

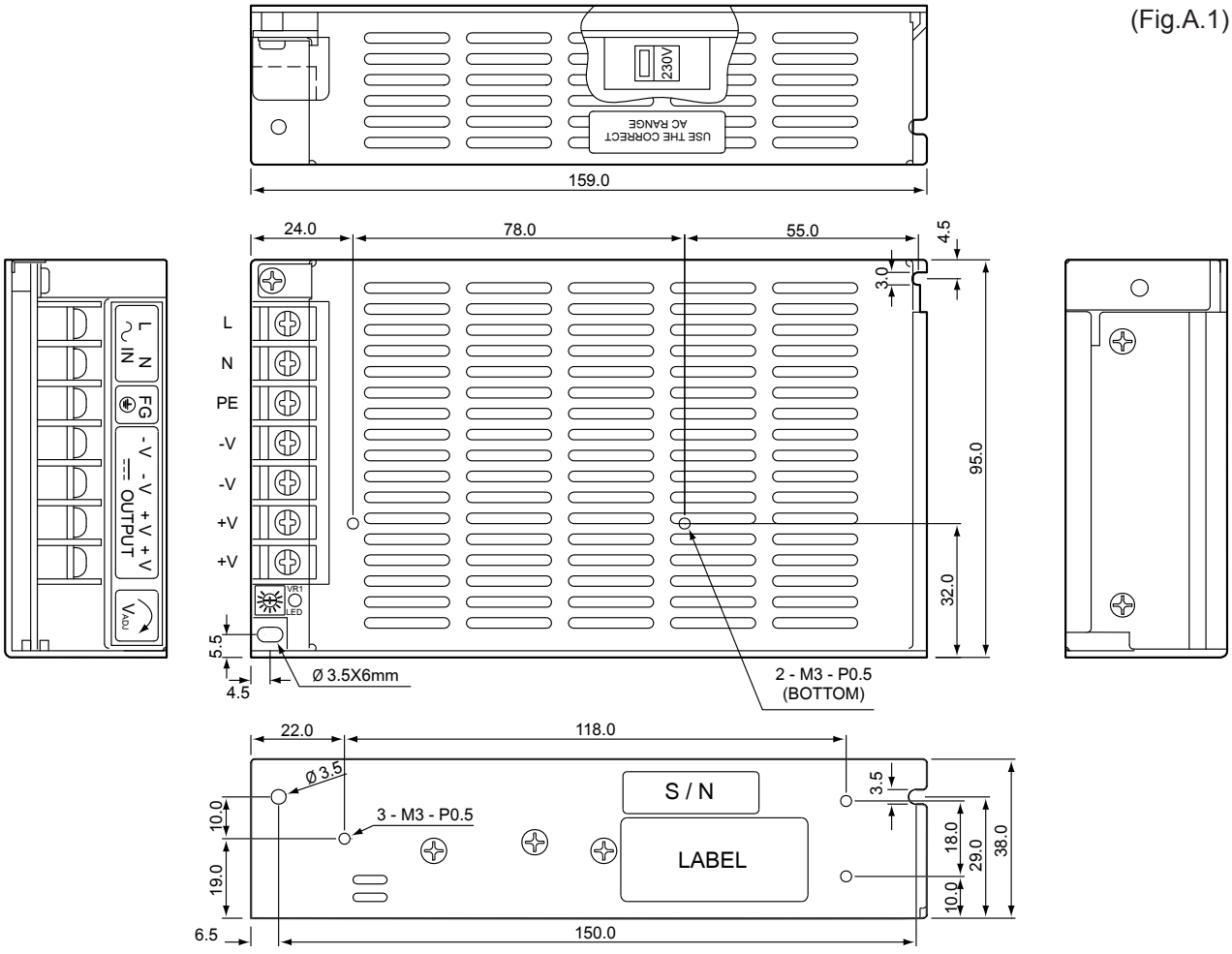
Blank page

A.1 ACCESSORIES

A.1.1 Power supply for TG2460H

The following figure illustrates the power supply provided by Custom to be used for printer operation.

(Fig.A.1)



PPSPS-075-24	Switching power supply 24V 75W
Input specifications	
Input voltage	85V ÷ 264V
Current	<2a @ 115V AC, <1A @ 230V AC (full load condition)
Input frequency	47 Hz ÷ 63 Hz
Output specifications	
Output voltage	24 V
Output current min. max.	0A ÷ 3.2A
Efficiency min.	78%
Enviromental conditions	
Operating temperature	0°C ÷ 70°C
Humidity	20% ÷ 85% Rh (w/o condensation)
Storage temperature/ Humidity	-10°C ÷ 85°C / 10% ÷ 95% Rh (w/o condensation)
Protection devices:	Shortcircuit, overload and overvoltage

(Tab.A.1)

A.1.2 Adjustable paper holder support kit

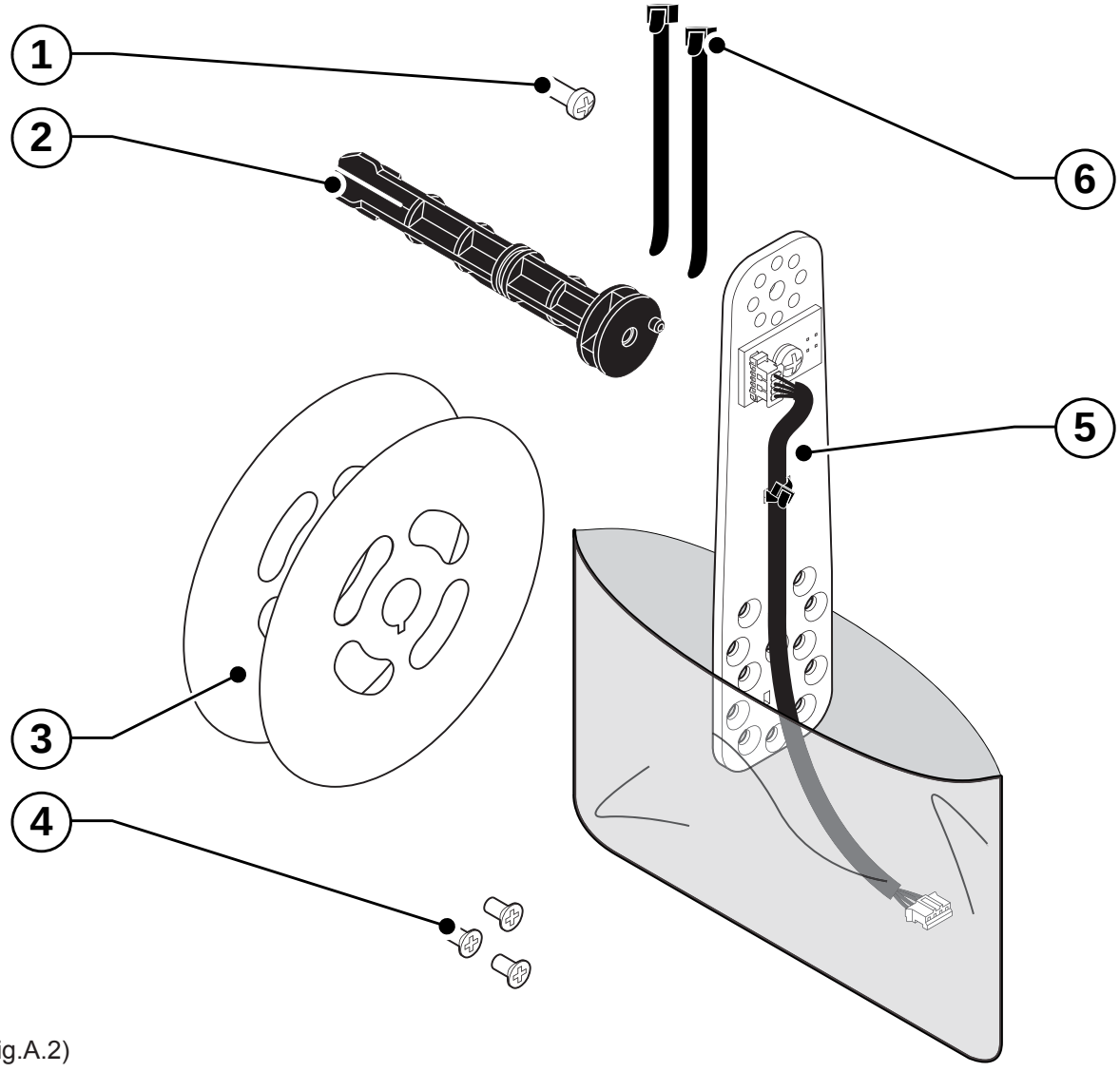
A paper roll holder support is available for TG2460H. It allows to use bigger diameter paper rolls (max 100 mm).

Paper holder support kit:

PCXSP-TG2460 II	Paper holder support kit with near paper end sensor

The kit is assembled as shown in fig.A.2 and contains the following components.

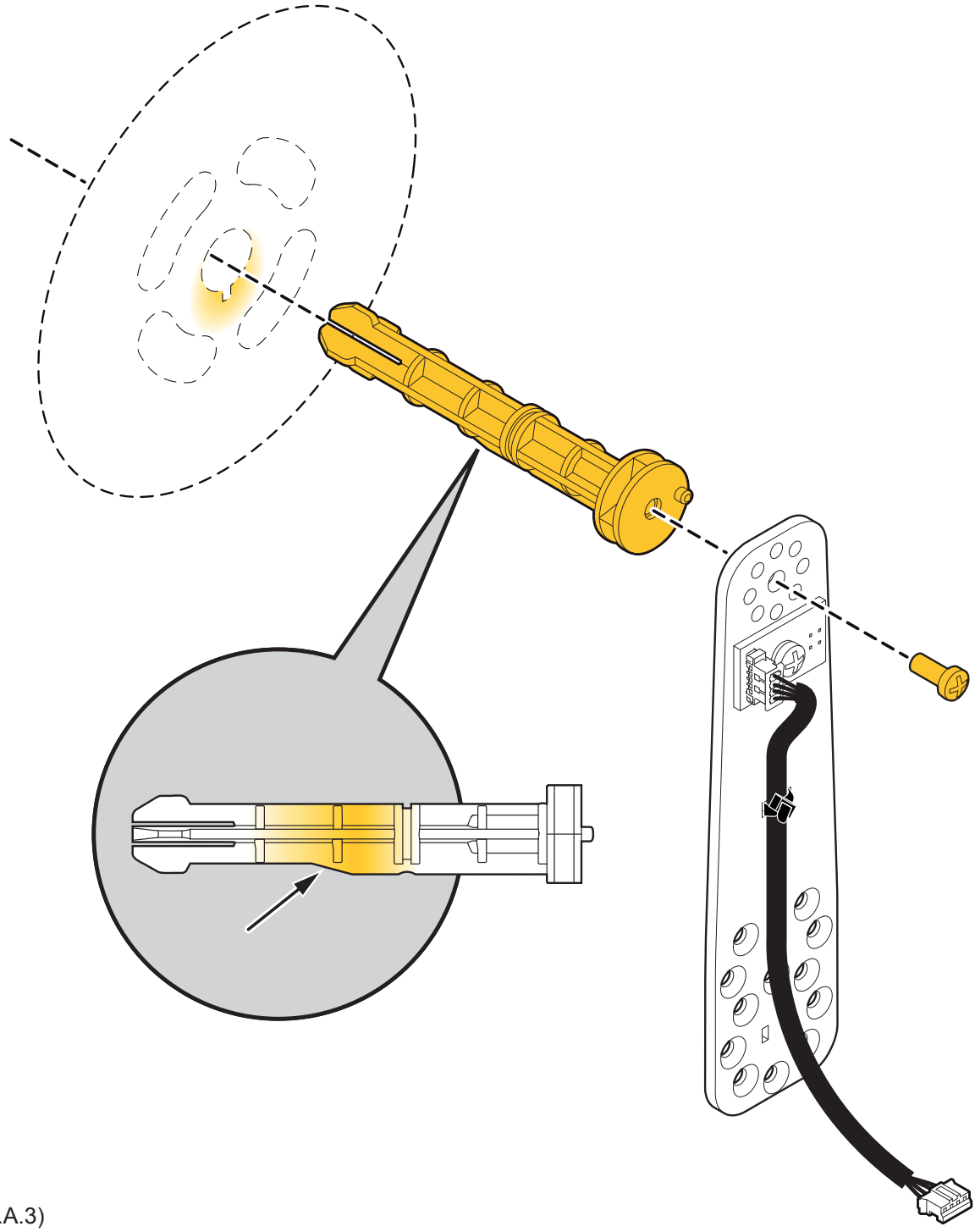
1. One fastening screw for the paper roll pin to paper holder support
2. Paper roll pin
3. Two disks for the paper roll containment
4. Three fastening screws for the paper holder support to the printer frame (M3x5)
5. Paper holder support (with cable and near paper end sensor board assembled)
6. Two plastic ties for fastening the cable to the printer



(Fig.A.2)

Assembling instructions

Fix the paper roll pin to the holder support by the one fastening screw on issue in the kit (see fig.A.3).
Be sure that the paper roll pin is assembled with the bevelled side turned in the low position (in order to matches the paper roll containment disks).

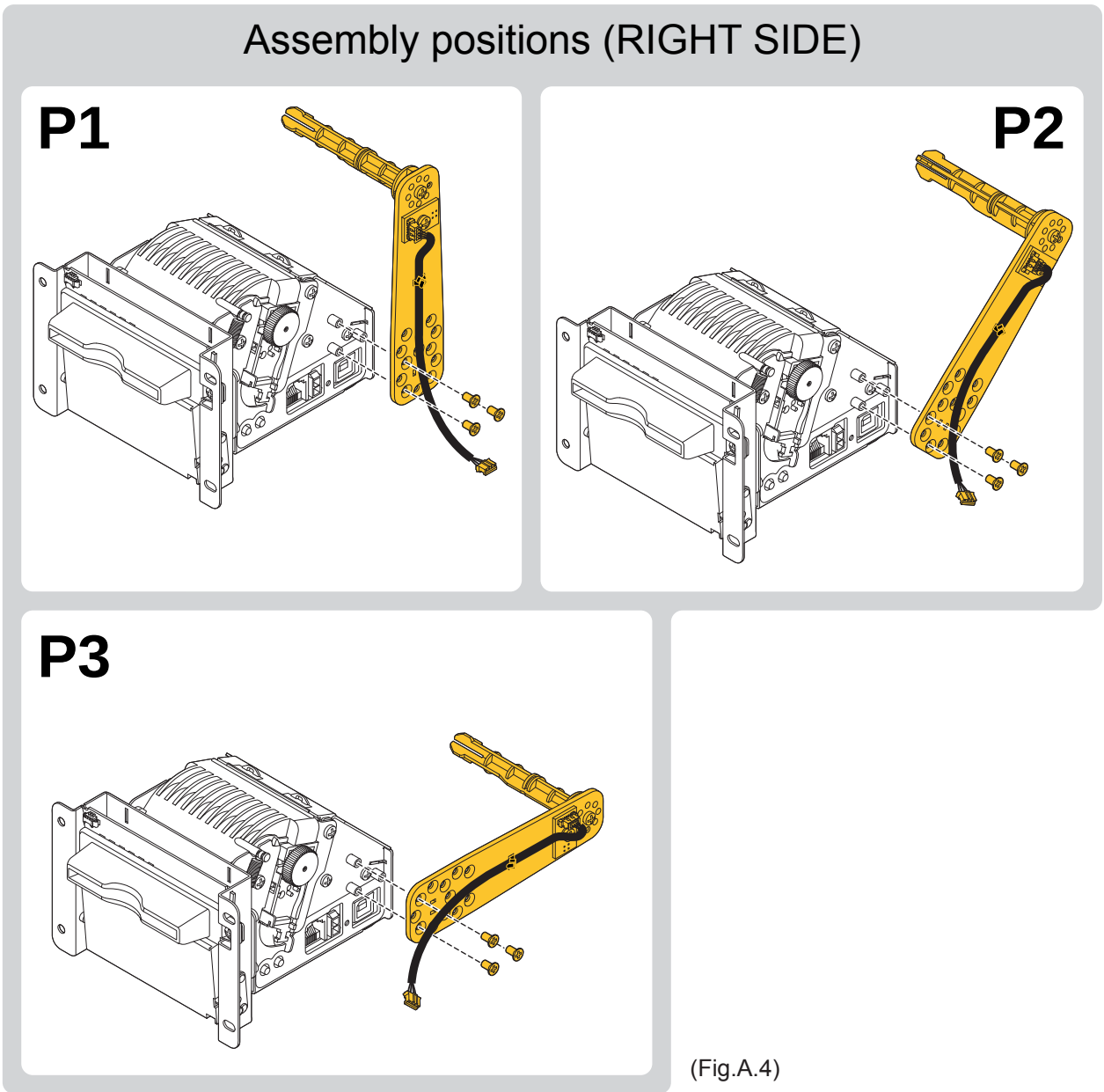


(Fig.A.3)

The paper roll holder support fastening is possible on both sides of the printer. The assembly isn't fixed but adjustable on 5 different positions on the left side (upper **P1**, 45 degrees up **P2**, rear **P3**, 45 degrees low **P4** and lower **P5**). On the right side of the printer, the assembly positions **P4** and **P5** are not possible because of interference with control panel. To fastening the paper roll holder support proceed as follows:

1. Move the paper roll holder support until three of the radial holes coincide with the three holes on the printer body (see fig.A.4 and fig.A.5).
2. Fasten the paper roll holder support with the printer body by the three M3x5 fastening screws supplied (see fig.A.4 and fig.A.5).
3. Connect the near paper end sensor cable to the connector on the left side of the printer (see fig.A.6).

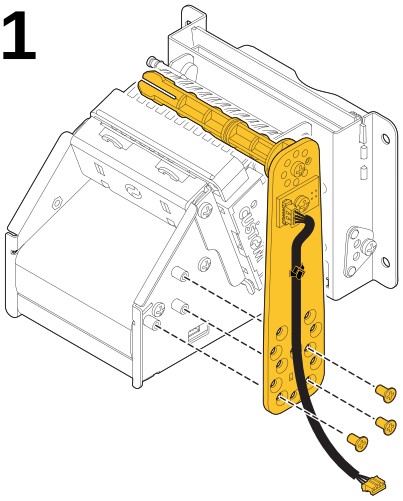
WARNING : Before fastening the paper roll holder support check the cable path (near paper end sensor) is correct (see fig.A.6). Incorrect positions of the cable could cause damage on it.



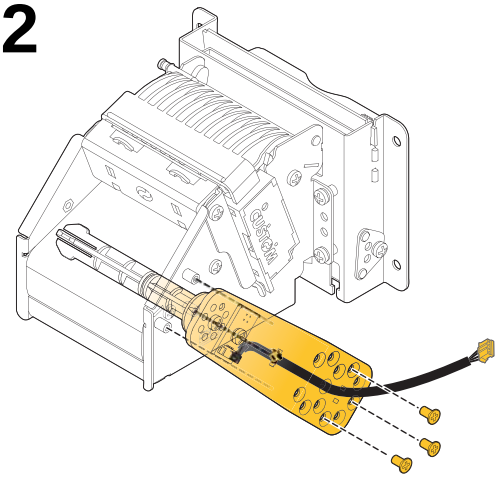
(Fig.A.4)

Assembly positions (LEFT SIDE)

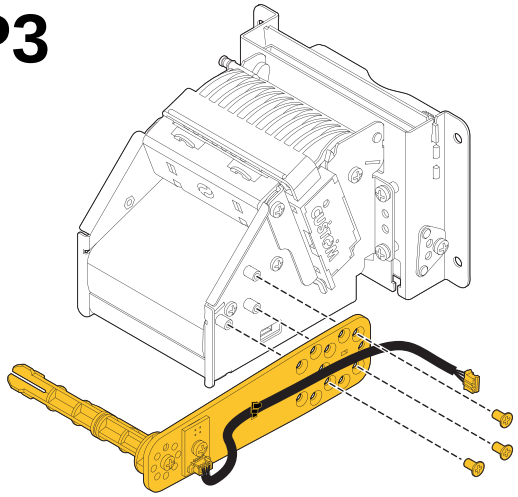
P1



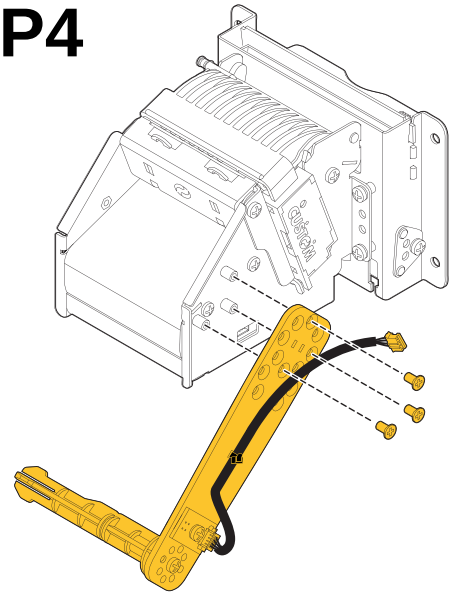
P2



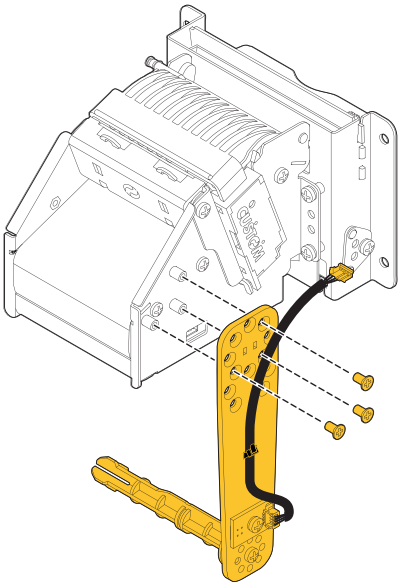
P3



P4

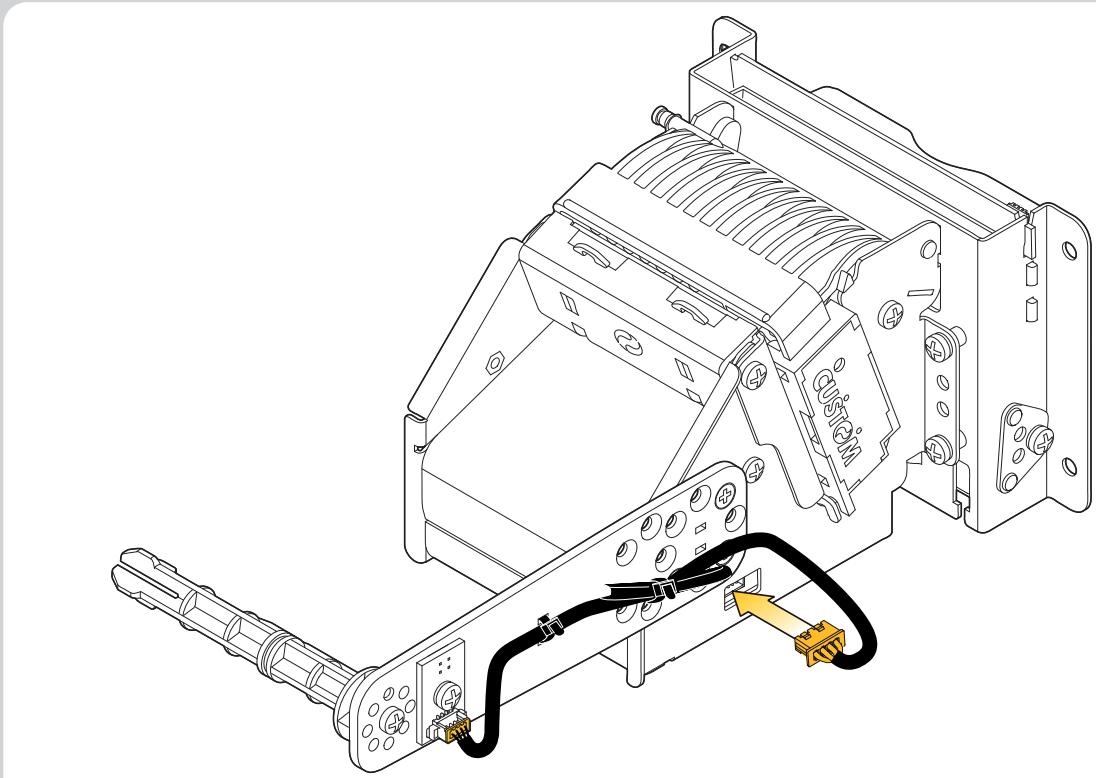


P5

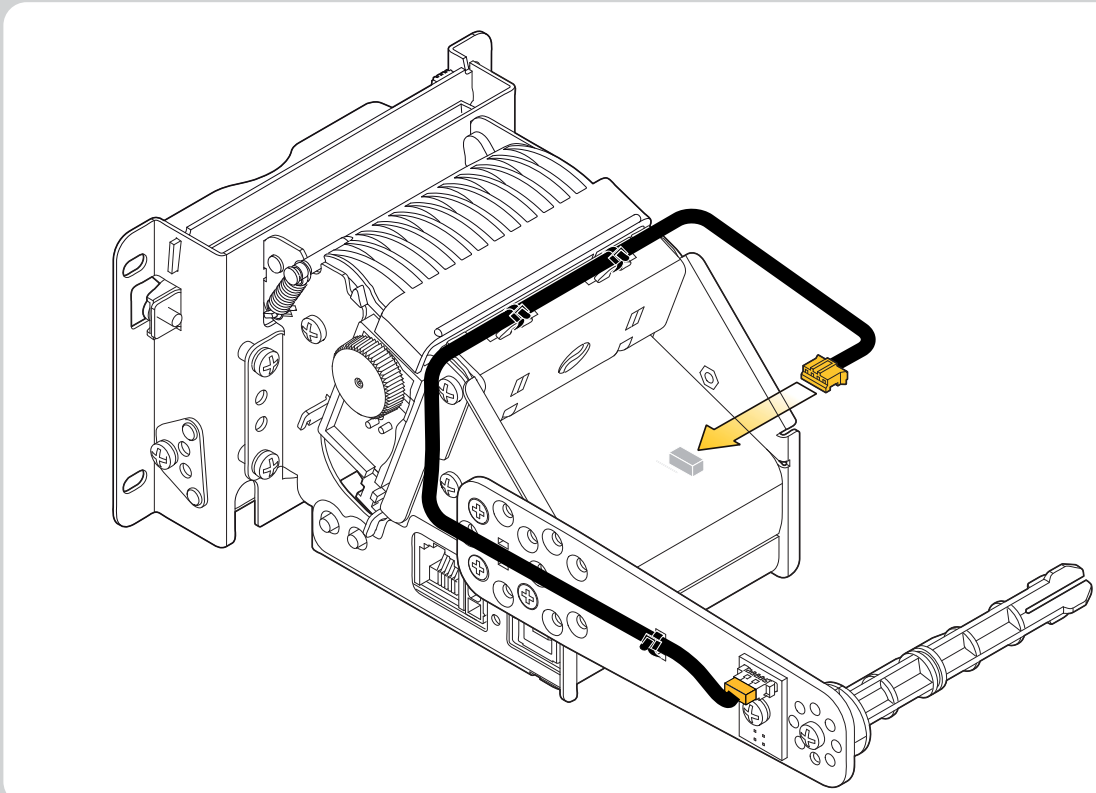


(Fig.A.5)

Sensor cable connection (LEFT SIDE)



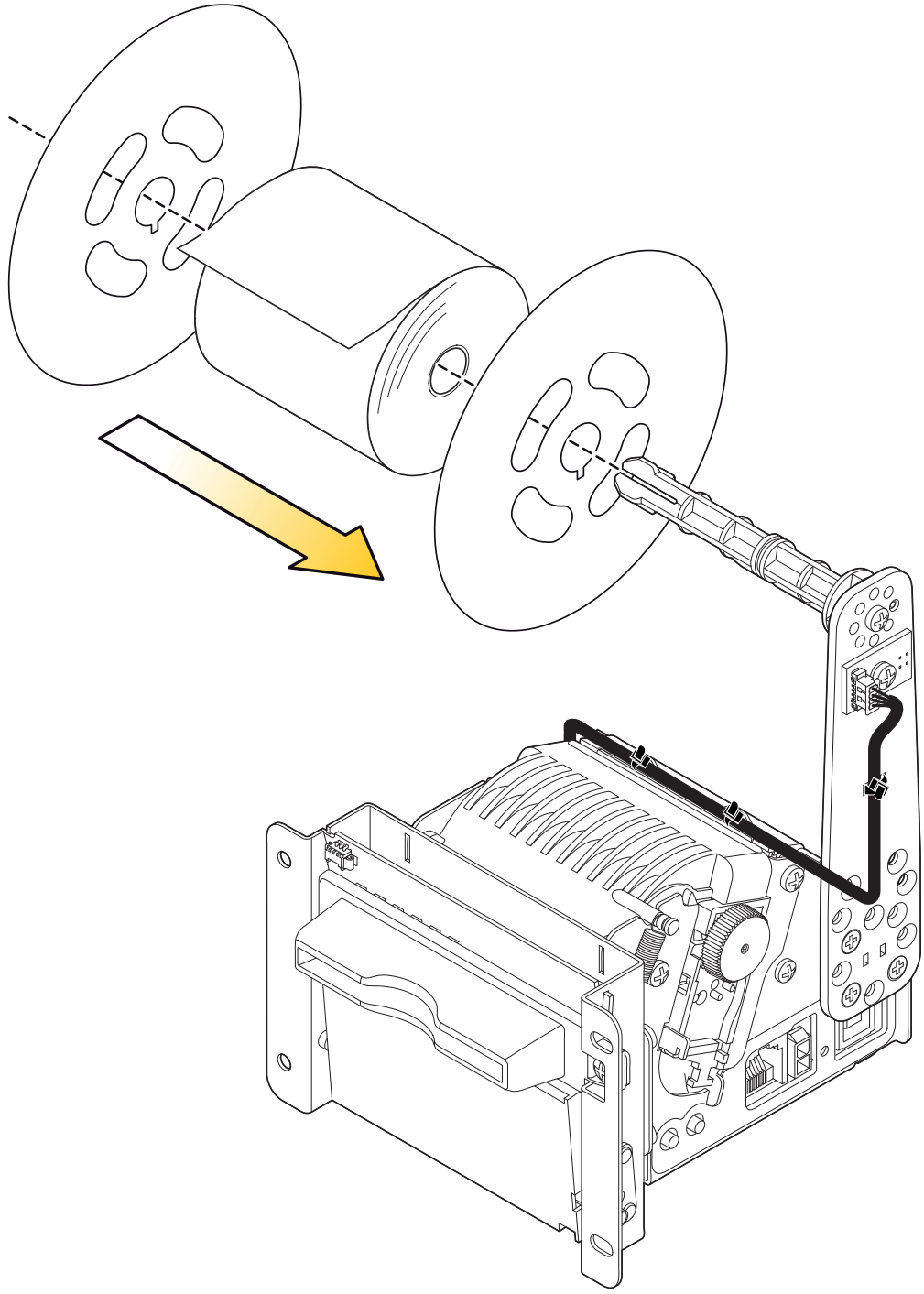
Sensor cable connection (RIGHT SIDE)



(Fig.A.6)

Using the paper roll containment disks

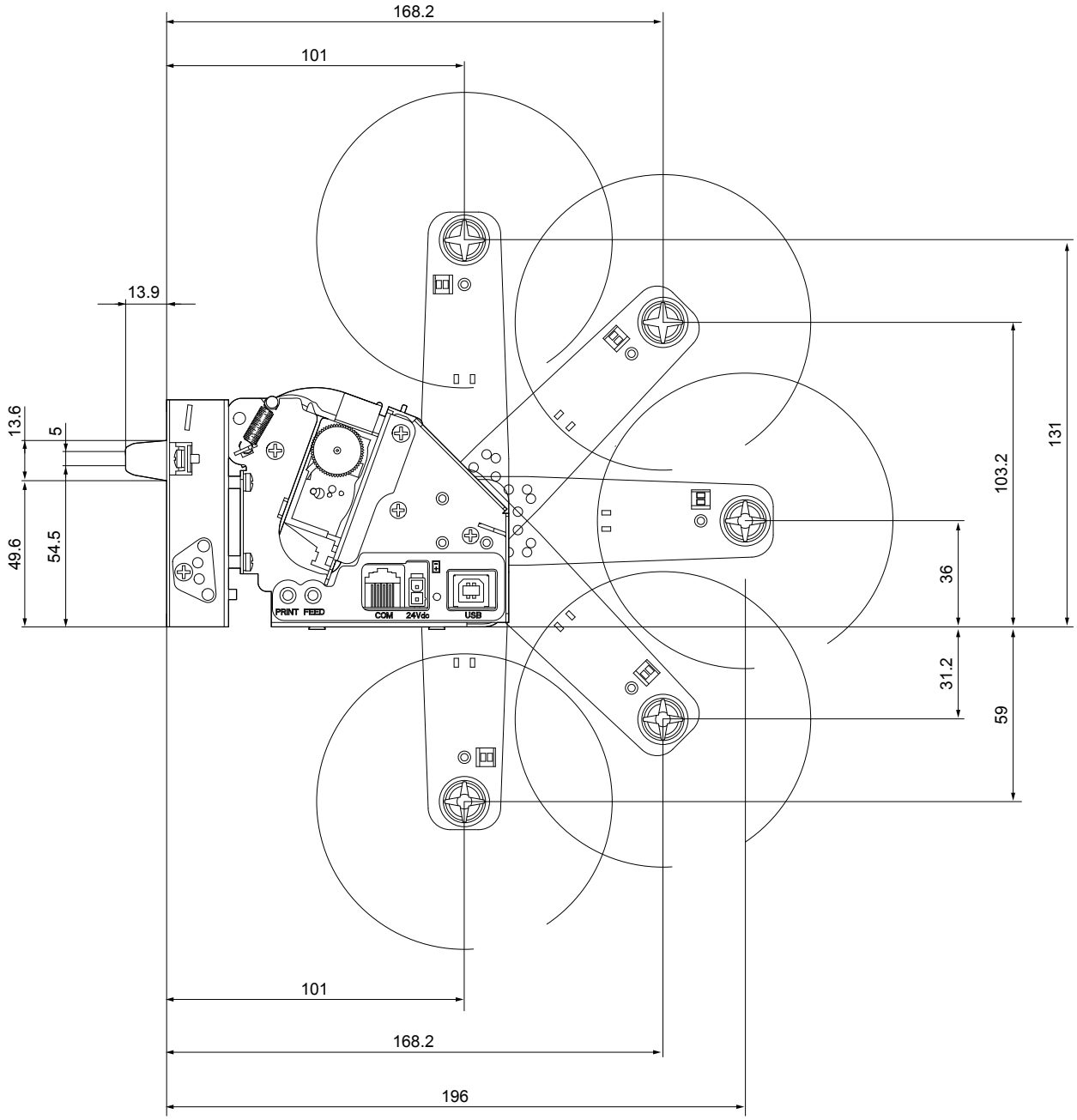
The paper holder support kit is equipped with two paper roll containment disks. The disks operates to keep the roll paper in the right position. They are realized with holes, which let the near paper end sensor on the paper holder support works correctly, and with a slot, which hinder the disks from rotating around the paper roll pin. The figure A.7 shows the assembly instruction for the paper roll containment disks on the paper roll pin.

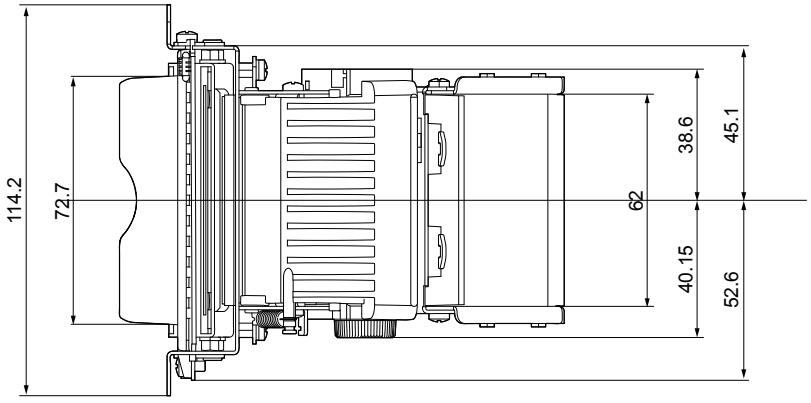


(Fig.A.7)

NOTE : The assembling operations are valid for all TG2460H models.

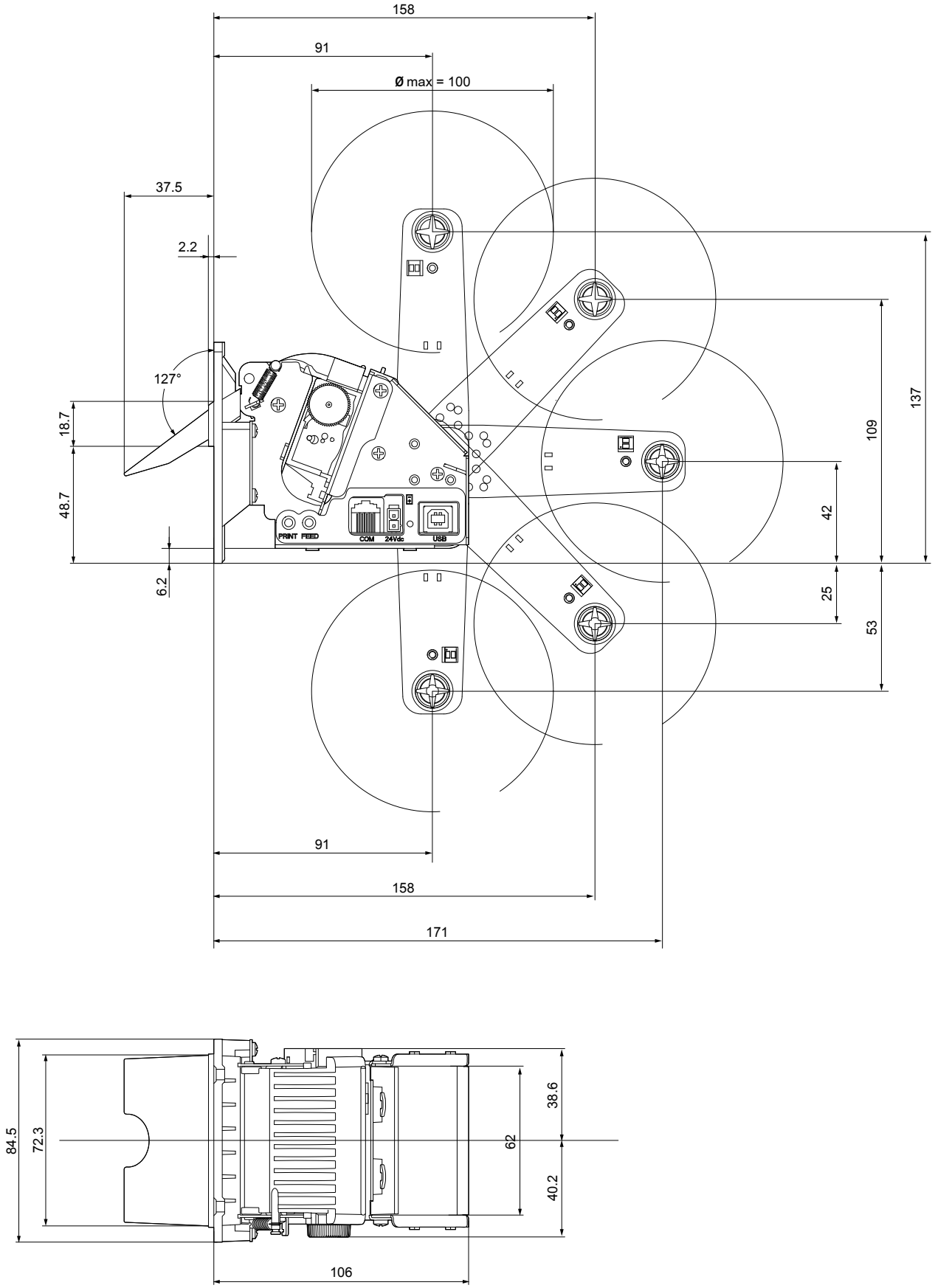
The fig.A.8 shows the dimensions for TG2460H-UA-0118 (model with cutter) with paper holder support.





(Fig.A.8)

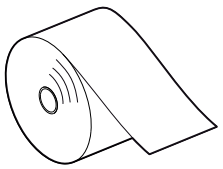
The fig.A.9 shows the dimensions for TG2460H-UN-0228 (model without cutter) with paper holder support.



(Fig.A.9)

A.2 SPARE PARTS

A.2.1 Supplies



RCT60X80
60mm thermal paper roll

B.1 TICKET ALIGNMENT

B.1.1 Ticket alignment

Paper with an alignment notch can be used in order to handle tickets with pre-printed fields and a fixed length.
To guarantee the alignment is necessary that the *"Notch Alignment"* parameter is enabled from the key setup (see setting configuration parameters), that the alignment sensor is calibrated and that the parameters are set.
The calibration of the sensor occurs automatically within the printer setup.

B.1.2 Enabling, calibrating and setting of parameters

The notch sensor is a reflection sensor that emits a band of light and detects the quantity of light reflected to it.
The presence of the notch is therefore detected by the amount of light that returns to the sensor, taking into account that the light is reflected by the white paper and absorbed by the black mark.

Calibration of the sensor occurs automatically and consists in adjusting the quantity of light emitted to adapt it to the degree of whiteness of the paper used.

To start self-calibration, is necessary that the *"Notch Alignment"* parameter is enabled during the printer setup (see setting configuration parameters) :

Notch Align. : **Enabled**

The printer will perform some paper FEEDS, at the end of which it will print the calibraration result and the value of the PWM duty-cycle of the alignment sensor driver so that it can be perform an optimal notch detection, for example:

Autoset Notch : **OK**
PWM Duty cycle : **37%**

The *"Autosetting Notch"* parameter indicates the operating condition of the self-calibration process; OK will appear if it has been successful, but if it has failed the words NOT OK will appear.

Another parameter that needs to be set is the threshold:

Notch ThresH. : 0**.75V**

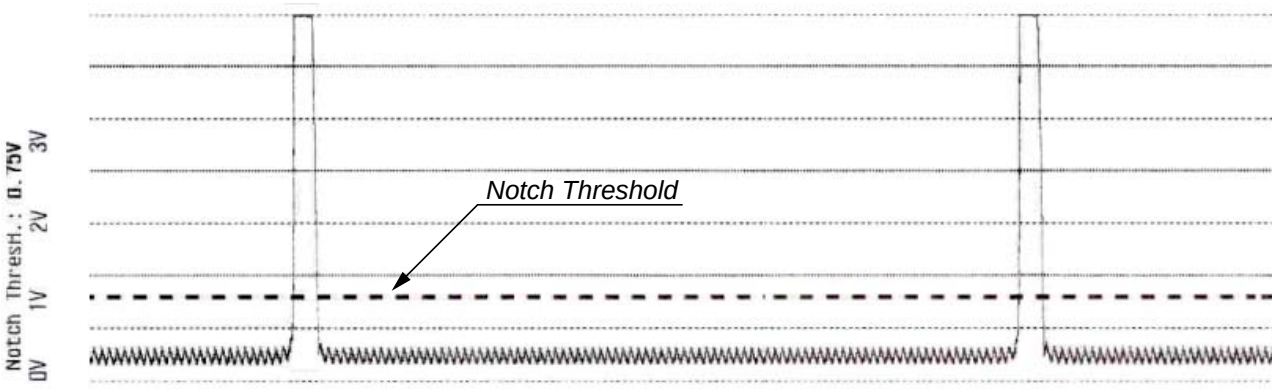
It is used to detect the presence of the notch: if the voltage value read by the sensor exceeds the threshold value set the notch is identified, otherwise the white paper is considered.
In order to better identify the optimum threshold for the paper being used, a paper characterization function is also available in setup.

Charact Paper. : **Yes**

By activating this parameter the outgoing voltage of the sensor will be presented in a graphic form as shown in the following figure B.1.

PAPER CHARACTERIZATION

(Fig.B.1)

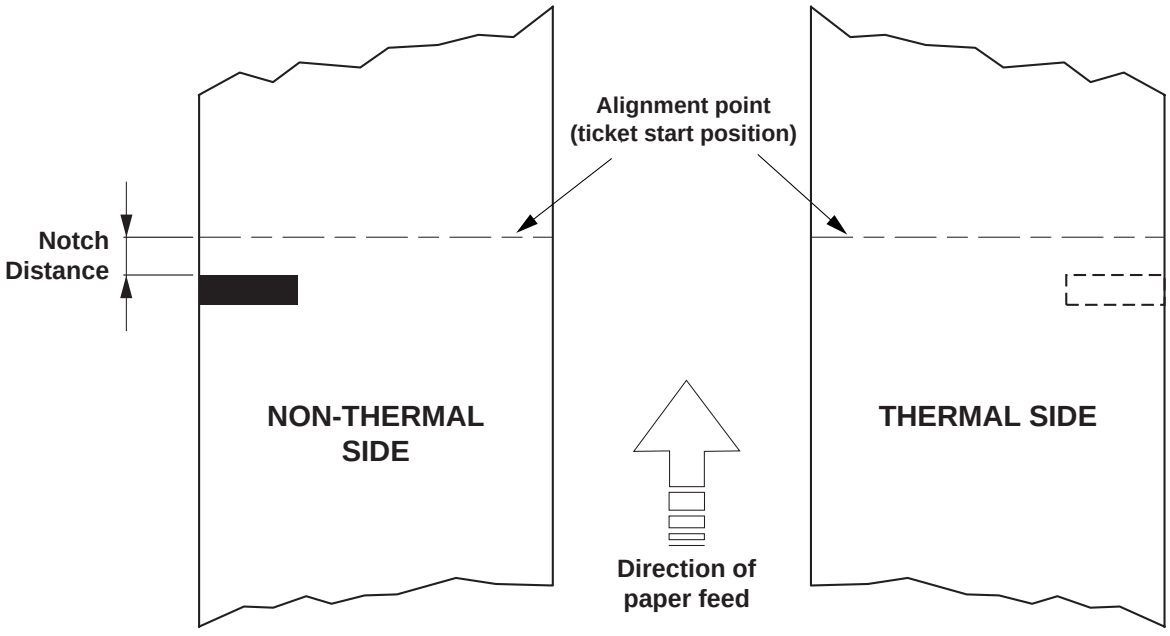


The graphic shows the outgoing voltage of the sensor and the threshold value previously set. It is clear that by adjusting the threshold value it is possible to find the best position that takes into account the signal peak and the small oscillations around zero.

The ALIGNMENT POINT is defined as the position inside the ticket that is the desired alignment point. The ALIGNMENT POINT can be defined over the notch or near this one; for this reason, the final parameters to be set in setup are:

Notch Dist. [mm x 10] . : 1
Notch Dist. [mm x 1] . : 1
Notch Dist. [mm x .1] . : 0

These parameters define the “Nocth Distance” that represents the distance from the notch to align or simply identify the notch distance from the ticket margin; in the above example the notch distance is 11 mm.



(Fig.B.2)

Figure B2 shows how the “Notch Distance” parameter represents the distance that exists between the notch and the desired alignment point. This parameter can have a minimum value of 0 mm (in this case the alignment point coincides with the edge on the notch) and a maximum of 12 mm. In reality the maximum distance corresponds to the mechanical distance between the notch sensor and the head, and it is for this reason that higher values and negative values are not permitted.

B.2 COMMANDS

B.2.1 Ticket alignment

Two alignment commands are available for TG2460H: **$1D $F6** e **$1D $F8**.
The command **$1D $F6** performs an alignment to the print head: the paper is fed through until the print head is at the ticket start.
The command **$1D $F8** performs an alignment to the cut: the paper is fed through until the cutter (or until the jagged blade, depending on the printer model) is at the set alignment point of the next ticket, so that a subsequent cut will occur precisely at the end of the ticket.

B.2.2 Setting the alignment distance

The “Notch Distance” parameter can be changed by the printer setup or by using the command **$1D $E7**.
For further information refer to the command itself.

B.2.3 Example

N.B.: To a better comprehension, in the following figures, the Notch is indicated on the same side of the printing text.

Example 1

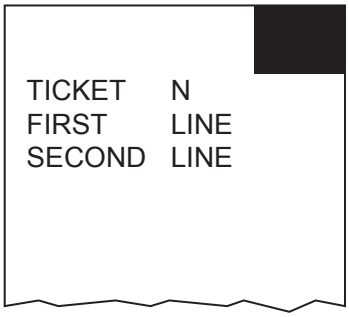
To print a ticket’s sequence witch the cut is made over the notch it’s necessary set the notch distance to zero as follows (this setting have effect after the ticket already in the printer):

TG2460H-UA-0118

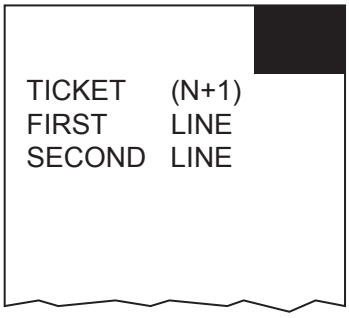
Fig.B.3

```
{Set Notch Distance}
$1D,$E7,$00,$00,

{Print text}
‘TICKET 1’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A,
{Cut alignment}
$1D,$F8,
{Cut}
ESC,’i’,
....
```




```
{Print text}
‘TICKET N’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A,
{Cut alignment}
$1D,$F8,
{Cut}
ESC,’i’,
```

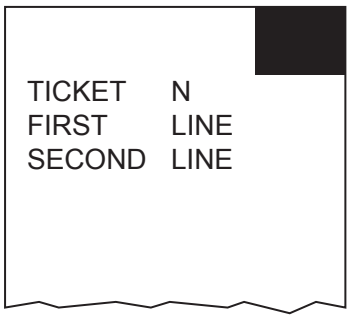


TG2460H-UN-0228

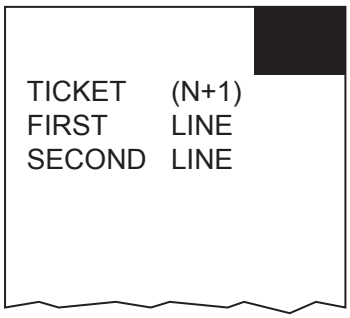
Fig.B.4

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A,
{Presentation mode}
$1D,$F8,
{Manual tear off}
....



{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A,
{Presentation mode}
$1D,$F8,
{Manual tear off}



Example 2

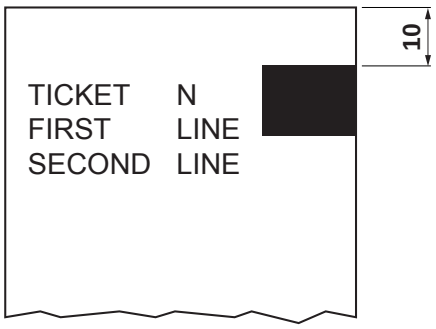
To cut 10mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

TG2460H-UA-0118

Fig.B.5

$1D, $E7, $00, $0A,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,'i',
...



{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,'i',
...

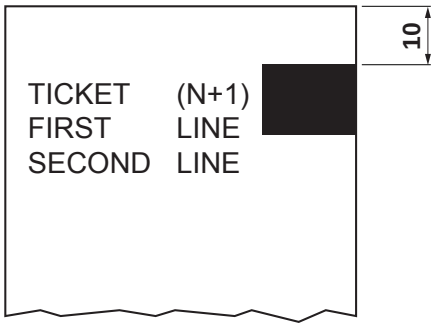


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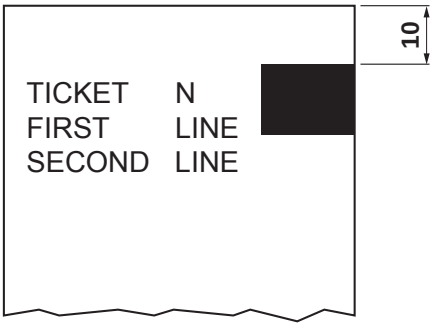
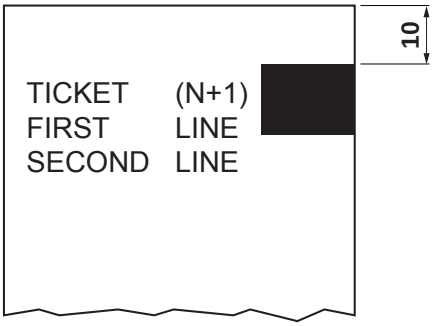
Fig.B.6

$1D, $E7, $00, $0A,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Presentation mode}
$1D, $F8,
{Manual tear off}
...



{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Presentation mode}
$1D,$F8,
{Manual tear off}
...



Esempio 3

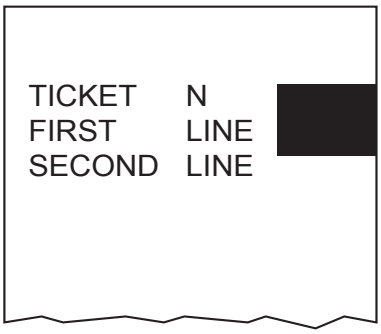
To print over the notch the command sequence is (this setting have effect after the ticket already in the printer):

TG2460H-UA-0118

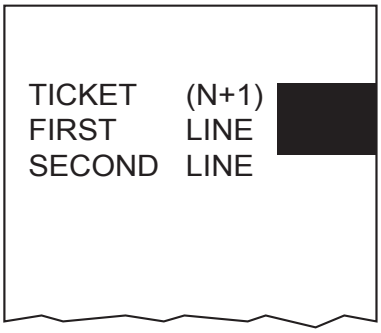
Fig.B.7

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print head alignment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'
...



{Print head alignment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'

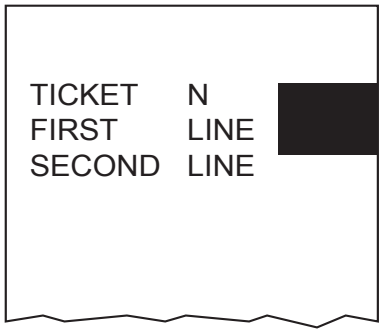


TG2460H-UN-0228

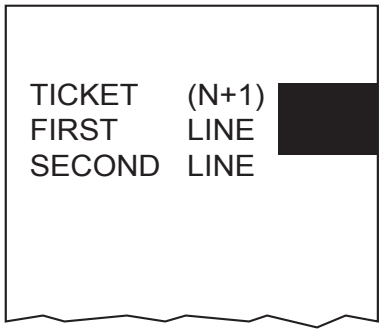
Fig.B.8

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print head alignment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Manual t ear off}
...



{Print head alignment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Manual tear off}



Esempio 4.

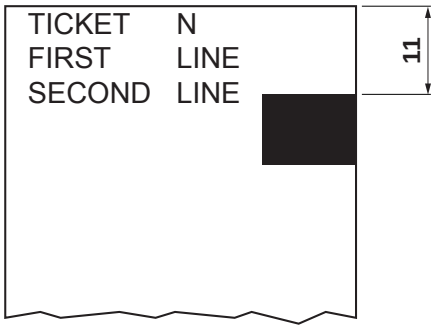
To print 11 mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

TG2460H-UA-0118

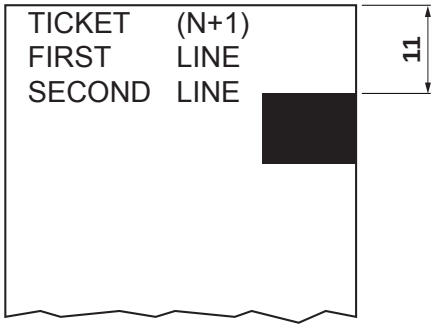
Fig.B.9

{Set Notch Distance}
$1D,$E7,$00,$0F,

{Print head aligment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'
...



{Print head aligment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'

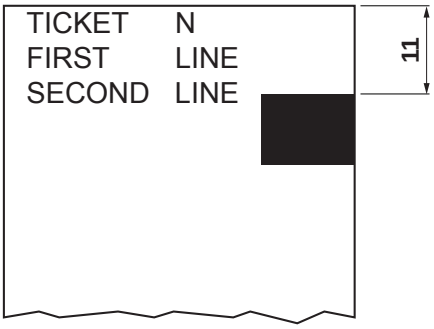


TG2460H-UN-0228

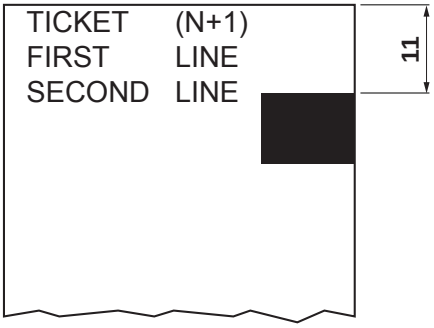
Fig.B.10

{Set Notch Distance}
$1D,$E7,$00,$0F,

{Print head aligment}
$1D, $F6,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Manual tear off}
...



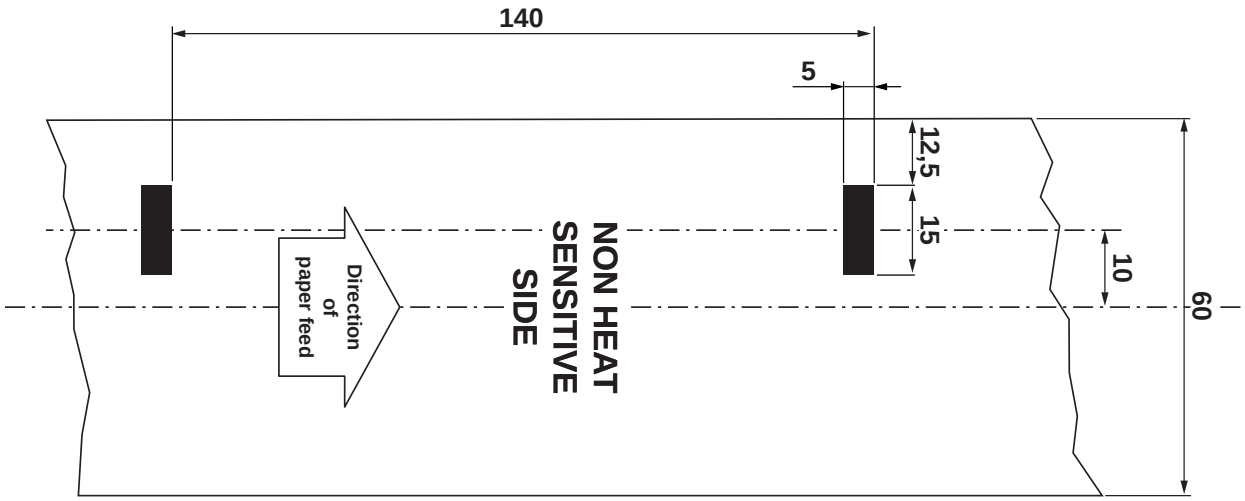
{Print head aligment}
$1D, $F6,
{Print text}
'TICKET N',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Manual tear off}



B.3 PAPER CHARACTERISTICS

B.3.1 Dimensions and position of the notch

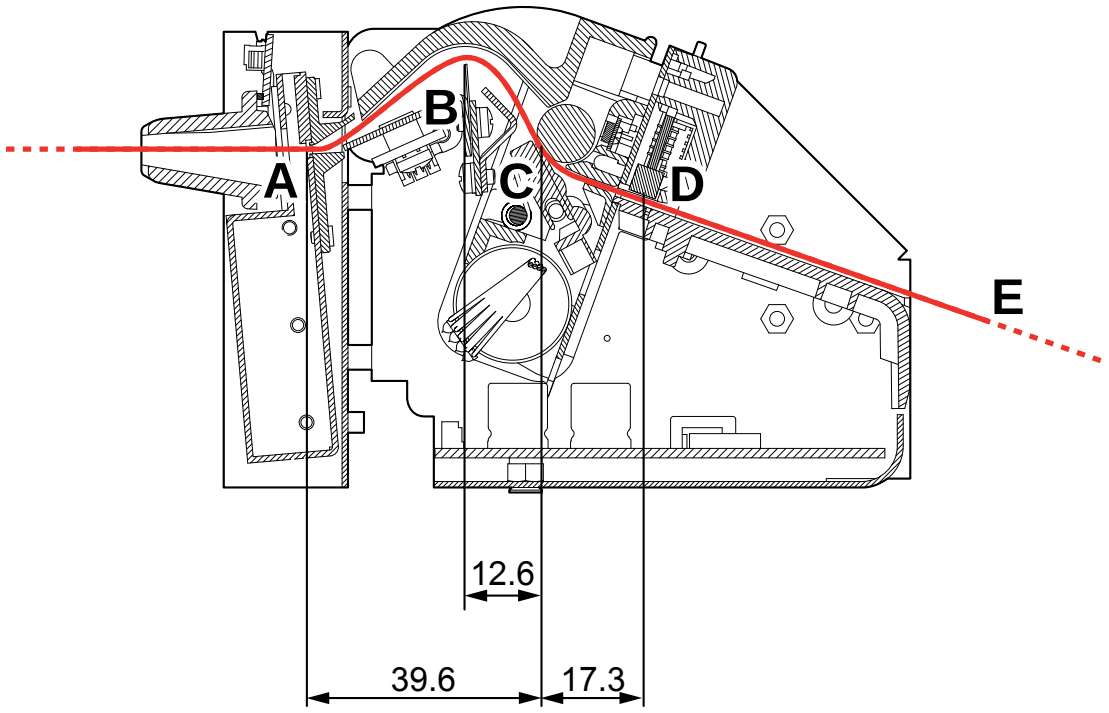
The notch must be placed on the non-thermal side of the paper as indicated in fig.B.11. The picture shows an example of paper with alignment notch.



(Fig.B.11)

B.3.2 Position of the notch

Figure B.12 shows a section of the printer and the distances between the printing head (C), the cutter (A) or the jagged blade (B) for models without auto-cutter and the notch sensor (D). The distances on paper between the points indicated in fig.B.12 will be exceeding because of the paper path (E) inside the printer.



(Fig.B.12)

B.3.3 Ticket Dimensions

It is very important to well calibrate the height of the printer area, according to the distance between the two edges of the notch. In order not to miss a notch (a ticket must therefore contain only one notch) the following equation must be respected:

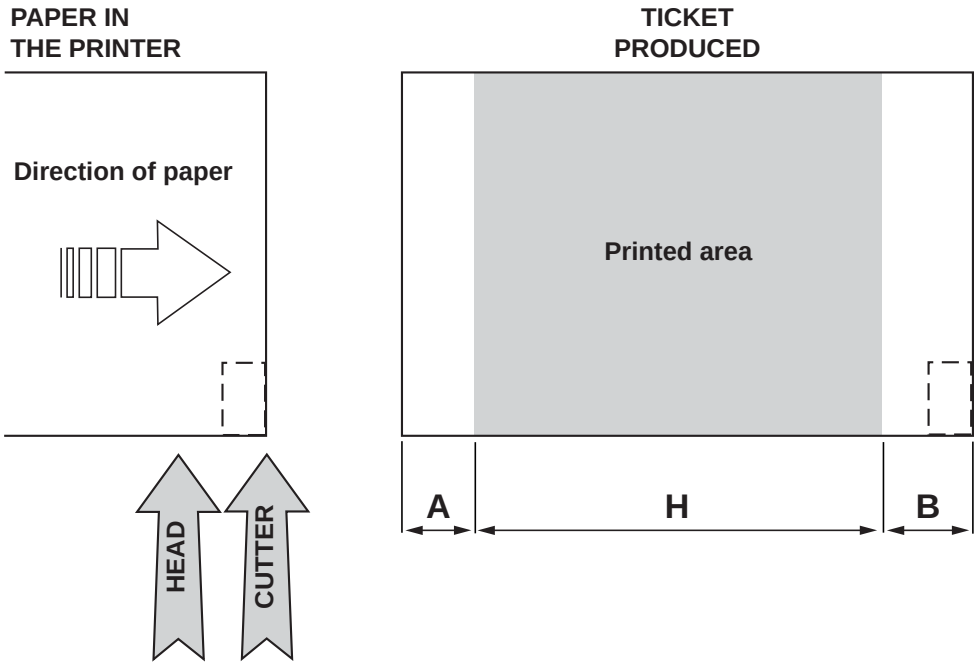
INTER-NOTCH DISTANCE > PRINTED AREA HEIGHT + NON-PRINTABLE AREA

where

INTER-NOTCH DISTANCE = the distance between two notch edges
NON-PRINTABLE AREA = cutter - printing head distance

The picture B.13 shows a sequence of tickets aligning each one at the cut. It can be noted that increasing the printed area will result in superimposing what is to be printed at the subsequent notch.
The size of the print area can be enlarged until it renders the alignment feed void, but not beyond.
It is important not to forget the non-printable area that is the distance between cutter and printing head.

LEGEND:
A = Alignment feed
H = Printing area height
B = Non-printable area (CUTTER-HEAD)



(Fig.B.13)

B.4 METHOD OF USAGE

B.4.1 Command sequence

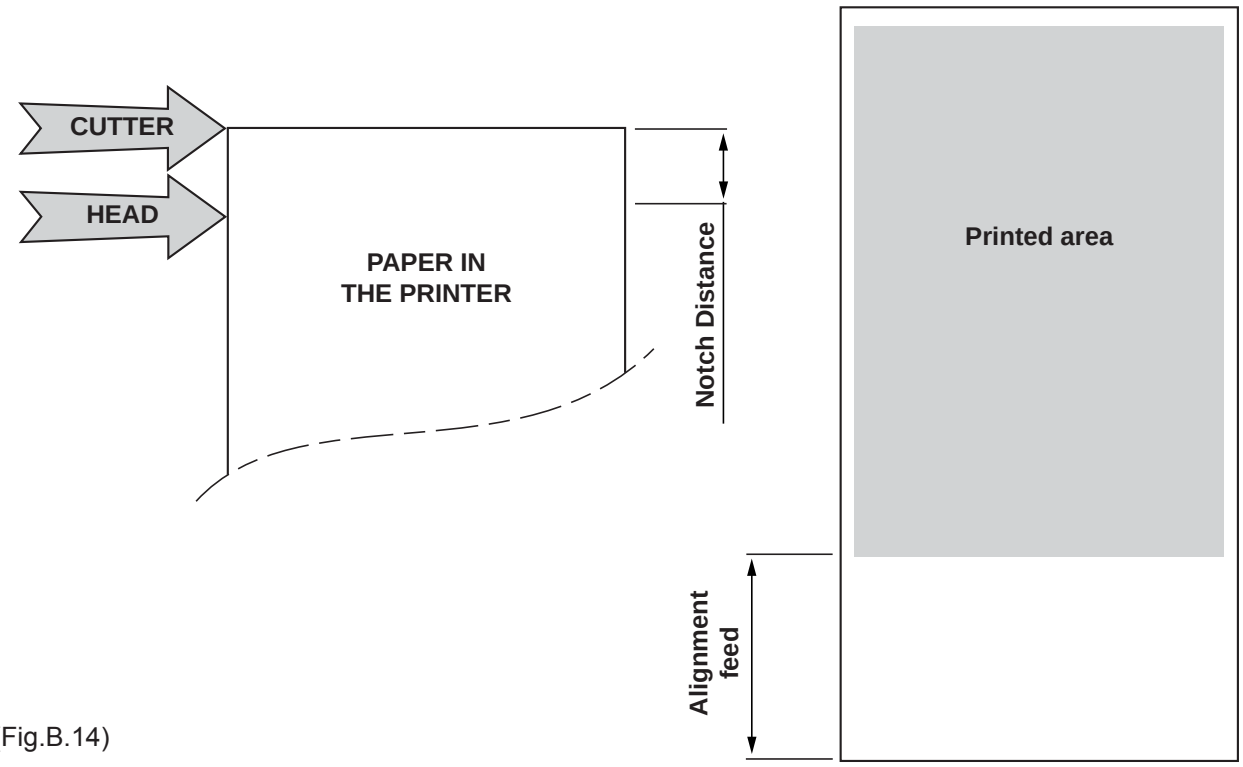
It is possible, when printing sequences of tickets, to primarily identify two different methods of operation that involve the alignment: ticket aligned at the cut and ticket aligned at printing.
Another very important aspect to bear in mind is the condition from which printing commences. In figure B.12, that shows a ticket aligned at the cut, it can be seen how every time a ticket printing begins this originates from an alignment at the cut, and therefore the distance between the start of the print area and the alignment line is equal to the head-cutter distance. The same situation applies to an alignment at printing.

B.4.1.1 Alignment at the cut

The sequence of commands to be entered when wanting to align a ticket at the cut is as follows:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print ticket: printing of text, logos or any other graphics.
3. Alignment at the cut command: $1D $F8
4. Cut command

The result is shown in figure B.14.



(Fig.B.14)

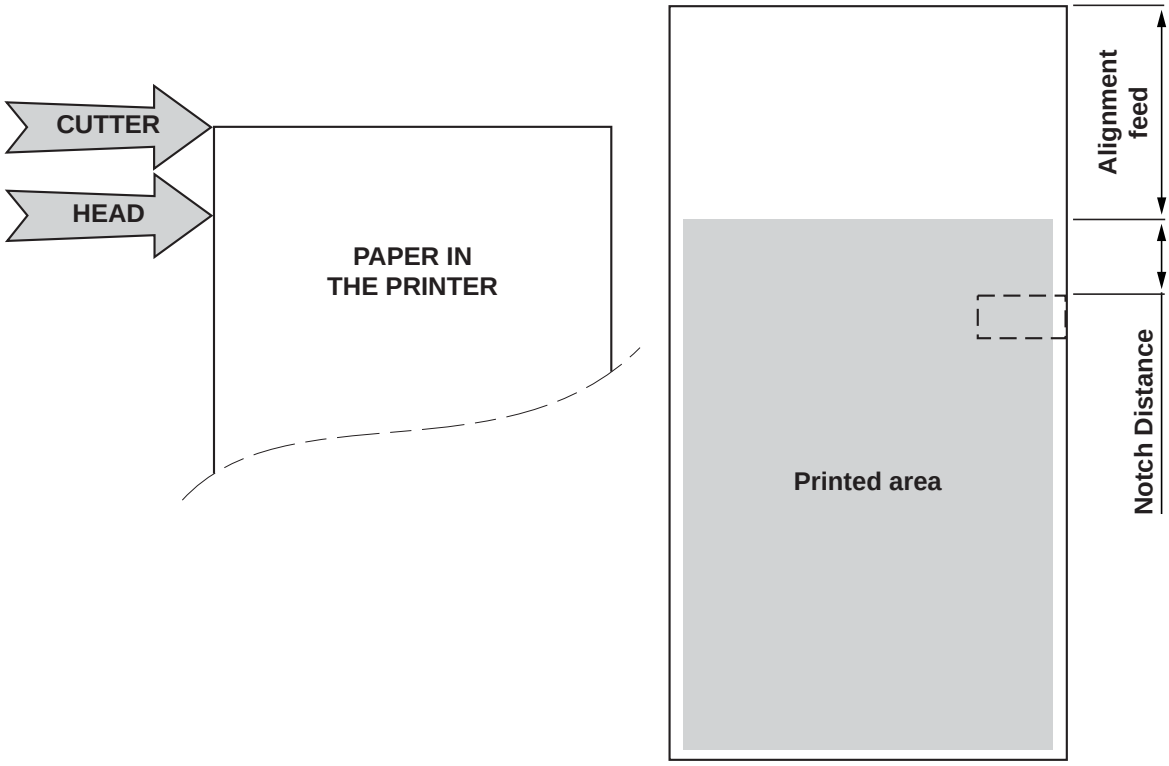
It is possible to see how the start of the ticket print area is not aligned, but the print starts in the rest position that the head took up at the moment the previous ticket was cut. At the end of the print area the printer has fed the paper through to align itself and perform the cut at the desired position.

B.4.1.2 Alignment at printing

Alignment at printing requires the following sequence of commands:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print alignment commands: $1D $F6
3. Print ticket: Printing of text, logos or any other graphics.
4. Cut commands.

The result is shown in figure B.15.



(Fig.B.15)

Unlike the previous case, the alignment feed takes place before the start of printing, so as to align the print area in the position required.

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Part Number : DOME-TG2460H Rev. 1.10

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